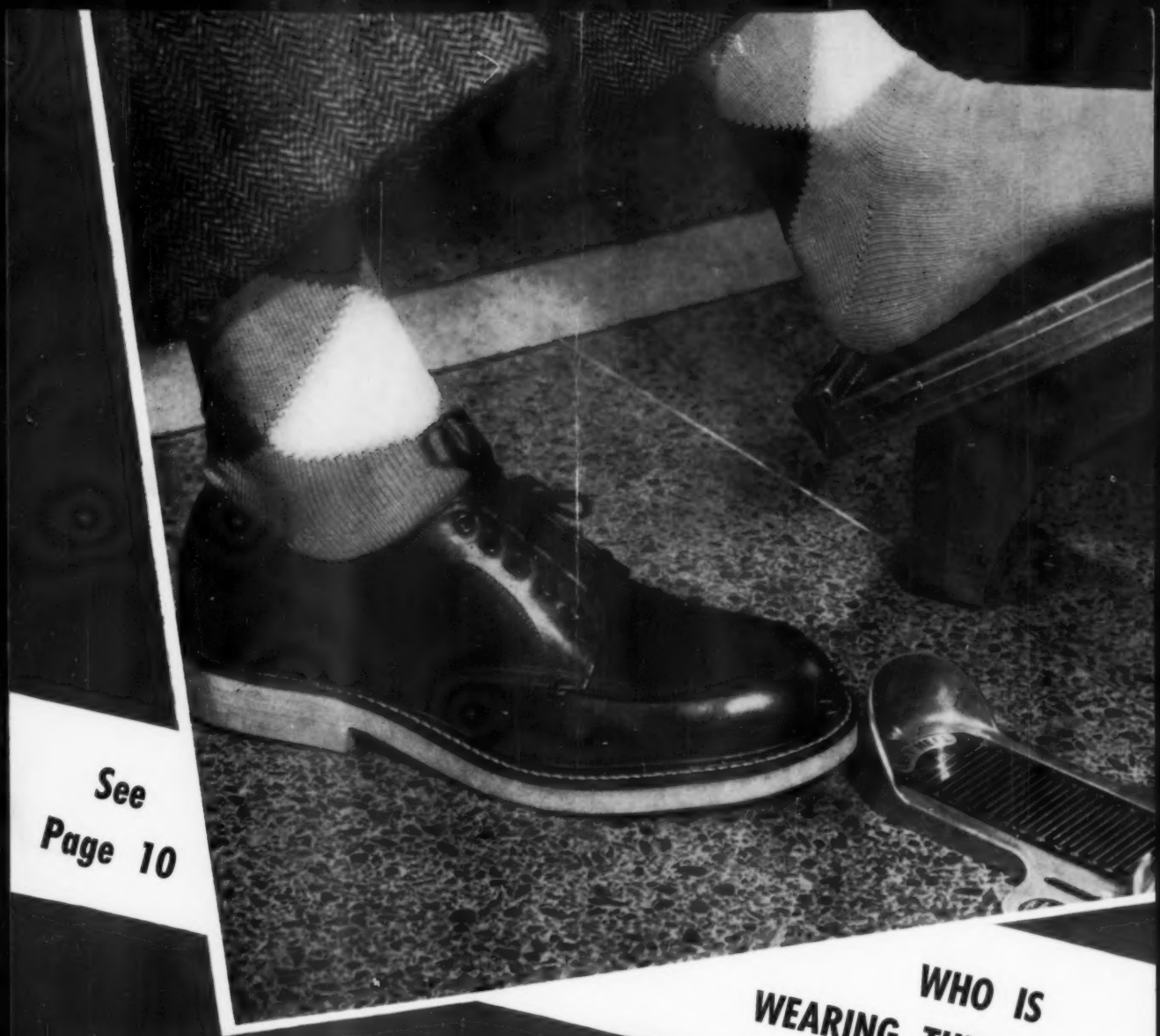


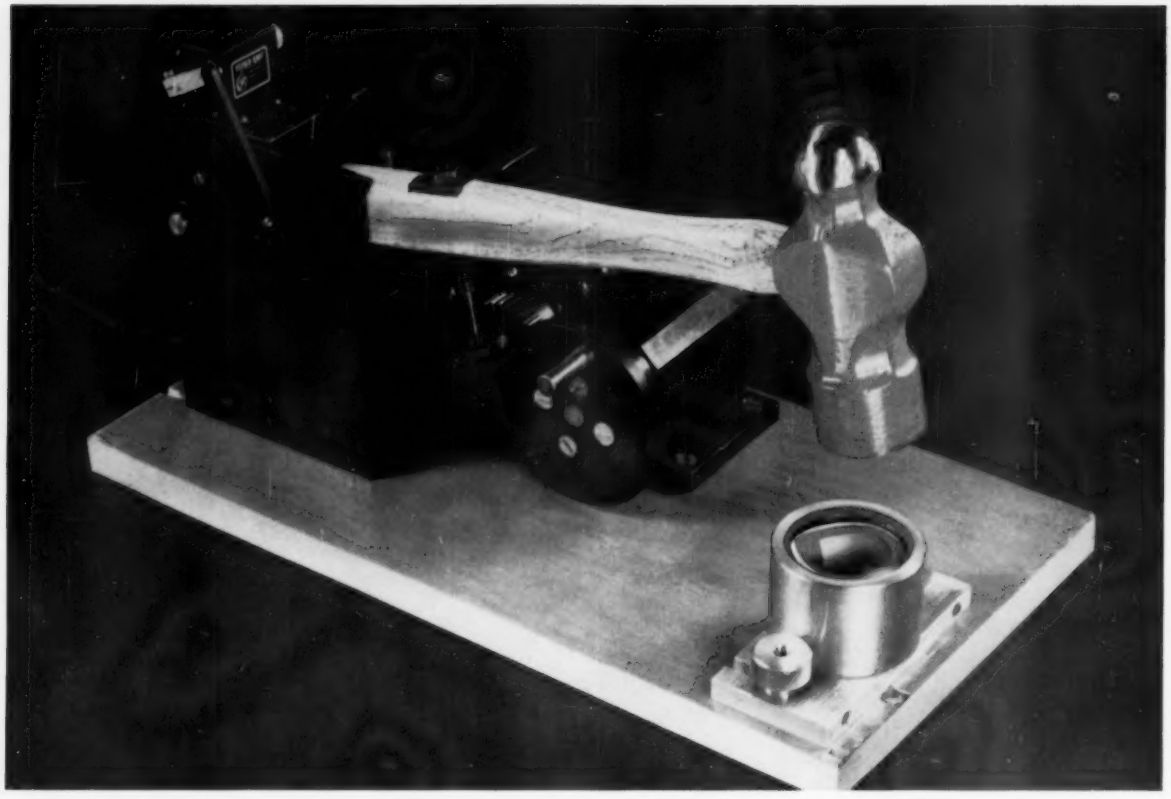
See Page 10

WHO IS WEARING THIS SHOE?

Safety Maintenance

EST. 1901 • AMERICA'S PIONEER MAGAZINE IN ITS FIELD • JUNE, 1959 • 50¢
Published By Alfred M. West Company, Inc.

Bal-SAFE lens resists 381,197 blows from 2-lb. steel hammer!



Vivid demonstration of impact resistance shows how B&L toughened safety lenses protect your workers' eyes

We know how to make 'em *tough!* Each blow of the hammer struck the polished lens surface with the force of .87 foot pounds . . . equal to that of a 1⅛" diameter steel ball dropped freely from a height of 50 inches. That's *twice* the impact required in Federal specification for the Drop Ball Test. But it wasn't until the 381,198th blow that the Bausch & Lomb lens finally yielded!

An ordinary industrial thickness (3 m/m) Bal-SAFE lens was taken from stock for this demonstration which was set up as a stunt for the National Safety Congress last Fall in Chicago.

For eye protection, safety lens quality is never a luxury. It may mean the difference between a worker's precious vision and sudden, tragic black-out. Insist on the extra margin of safety of Bal-SAFE lenses for every worker—plano or prescription.

(For details, use Key # F-1 on card on page 1)

BULLETINS & CATALOGS

As a convenience to executives, these new publications of manufacturers are offered by the Reader Service Department of SAFETY MAINTENANCE. To obtain copies write in the key numbers on the free-postage card below.

MAINTENANCE

Grease & Oil Absorbent 399
Wyandotte Chemicals Corp. Brochure pictorially presents an all-purpose absorbent which does not break down, dust, mud or cake under heavy traffic. Of special interest to safety personnel, the compound is non-flammable, non-irritating to the skin and will not harm fabrics, wood, metal or rubber floors.

Simplified Machine Installation .. 400
Unisorb Div., The Felters Co. Folder provides information on simplified machine mounting and vibration control. Recommendations are offered on the company's line of vibration absorbing pads and cement.

Floor Maintenance 401
Finnell System catalog of floor maintenance equipment, completely illustrated with thorough descriptions and specifications. First section is devoted to maintenance machines, the second to waxes and finishes for meeting the everyday and/or unusual floor problems.

Watertight Masonry 402
Master Builders Co. Six-page bulletin outlines major considerations in designing tight masonry walls, describes new "O.M.," a plasticizer with water repellent properties to minimize shrinkage and cracking. Also discussed are mortar ingredients, proportioning, effect of mechanical disturbance, and importance of proper protection.

Effective Floor Maintenance 403
Walter Maguire Co., Inc. Bulletin describes eight money-saving answers to tough flooring problems including paving, patching, grouting materials and brick, all emery-based, and curing agents. Included is a special emery-aggregate designed for heat resistance and next to the diamond in Moh's Scale of Hardness. Included is estimating data indicating quantities of various products normally required per unit of floor space to be paved.

PERSONAL PROTECTION

Glare & Impact Eye Protection .. 404
Wilkie Optical, Inc. Literature describes new Impact and Glare Safe lenses and the requirements each lens meets for a particular profession. All lenses must meet steel ball "drop test" which requires that ball be dropped "upon the . . . outer surface . . . from a height of 50 inches."

New Sweatbands 405
Mine Safety Appliances Co. New bulletin describes sweat absorbers that are designed not to interfere with safety glasses or goggles and that can be worn under safety hats, welding helmets or face shields. Bands are easy to clean and last indefinitely.

All-in-one Respirator 406
Pulmosan Safety Equipment Corp. New single filter retainer cup with interchangeable filters provides positive protection against all dusts, mists, organic vapors, fumes, etc. New series approved by Bureau of Mines, Dept. of Agriculture. Bulletin describes new respirator, its uses against the various hazards.

Visitor Eye Protection 407
Bausch & Lomb Optical Co. has designed a new, lightweight "Visitor Spec" for plant visitors, described in this bulletin. New product is priced as a give-away item, allowing visitor a souvenir and eliminating cost of repeating cleanings and sterilization. Brochure lists unit prices and describes advantages of the new impact-resistant, molded acetate glasses.

FIRE PROTECTION

Fire Equipment Reference 408
M. L. Snyder & Sons, Inc. New 96-page Stempel catalog provides quick, handy reference for all types of fire fighting equipment plus additional facts and figures on fire protection. Included in the bulletin is a chart on types of fire extinguishers to use in fighting Class A, B and C fires.

Fire Extinguishers 409
Ansul Chemical Co. has prepared a new, 6-page guide to fire extinguishers containing table comparing characteristics of various types of extinguishers plus a graph showing comparative effectiveness of extinguishing agents according to UL ratings.

Fire Control Chart 410
Walter Kidde & Co., Inc. Two-color chart explaining three classes of fires and the approved portable extinguishers to be used on each. Chart can be used on bulletin board as educational item for employees.

INDUSTRIAL HYGIENE

Dust & Fume Control 411
Kirk & Blum Mfg. Co. 52-page catalog describes 60 different plant dust control system installations, including special control systems for ceramic, foundry, grain, metal-working, steel and woodworking plants. Well illustrated, the material shows how special installations are designed for specific areas.

Portable Resuscitators 412
National Equipment Co. special bulletin describes portable resuscitation kits for cardiacs, asthmatics, drowning, suffocation,

(Continued on the next page)

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and other cases involving anoxia. Literature details prices, size, weight and oxygen supply.

MISCELLANEOUS

Mercury Switch 413

MICRO SWITCH, Div., Minneapolis-Honeywell. Revised catalog describes mercury switches, including photographs, dimensions, electrical ratings, drawings, application information and complete technical data. Catalog covers everything from simple interlock mechanisms to intricate space craft guidance systems.

Warning Signs 414

Calif. Metal Enameling Co. New catalog especially designed to meet the safety sign needs of the petroleum industry. Signs, enamel on steel, are impervious to climatic conditions and are clear and legible. Standard and special wordings available.

Safety Grating & Grille Panels ... 415

Bustin Steel Products, Inc. Recent brochure describes, through illustration and text, uses of new safety grating and all-purpose grille panels. New product features plain, even surface on lower side and serrated surface on other to meet all requirements of skid-proof flooring and stair treads.

Safety Equipment Catalog 416

Martindale Electric Co. Catalog contains detailed information of maintenance, production and safety equipment from goggles, respirators, to rotary blades. Extensively illustrated. Text includes specifications, application information.

Light & Safety 417

Holophane Co., Inc. Brochure describes the combined importance of lighting and safety, drawing illustrated examples from industry, schools, offices, institutions, and homes. Charts bring out importance of excellent lighting in statistics on accidents, injuries, production, sales, etc.

What's YOUR Problem?

- Has an accident or fire interrupted production?
- Want to know how to prevent it?
- Do you need background information on equipment for industrial safety, hygiene, or maintenance?

As a service to its readers, "Safety Maintenance" will arrange to supply manufacturers literature on the following subjects. Just insert the key number on the Readers Inquiry Card on the preceding page and be sure to fill in your name and address. If you need information on a specific type of product, simply write it in on the Inquiry Card.

Key Number	Subject
	PERSONAL PROTECTION
101	Safety Goggles
102	Face Shields
103	Lens Cleaning & Anti-Fogging Equipment
104	Sweat Band
105	Hard Hats
106	Respirators & Masks
107	Protective Clothing
108	Women's Protective Clothing
109	Safety Belts
110	Safety Gloves
112	Anti-Slip Soles
113	Oil-Resistant Soles
114	Welding Helmets
117	Safety Shoes
118	Safety Boots
	FIRST AID AND HYGIENE
122	Sanitary Drinking Facilities
123	Wash-up Facilities
124	Salt Tablets
125	Resuscitators
126	Antiseptic Medication
127	Burn Medication
128	First Aid Kits & Supplies
129	Stretchers & Litters
130	Throat Medication
131	Eye Wash Fountains
134	Hearing Testers
135	Hearing Protectors
136	Noise Analysis Equipment
	FIRE PROTECTION
142	Fire Alarms
143	Safer Solvents

Key Number	Subject
144	Degreasing Machines
145	Drum Safety Valve
148	Watchmen's Control Systems
	LIGHTING AND WARNING DEVICES
150	Alarms & Warning Lights
153	Fluorescent Lamp Guards
154	Emergency Lights
	MAINTENANCE
161	Anti-Slip Waxes & Finishes
162	Floor Cleaning Compounds
163	Floor Cleaning Machines
164	Floor Resurfacing Materials
165	Paints
169	Toilet Sanitizers
	LADDERS & HANDLING
170	Ladders
171	Ladder Safety Devices
172	Scaffolds
173	Work Platforms
	GUARDS
178	Machine Guards
179	Power Press Feeders
180	Safety Tools
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193	Employee Safety Guide
195	Changeable Letter Signs

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Safety Maintenance

formerly "SAFETY ENGINEERING"

Volume 117, Number 6 **June, 1959**

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● EVERYBODY—AND NOBODY—CARES FOR GADGETS

We Americans are suckers for gadgets—at work, at home or at play. Perhaps that's one of the many reasons why our high standard of living is the envy of the rest of the world. What we take for granted as an actual necessity to make life bearable would be considered the pinnacle of luxury in another country.

We must have the latest labor-saving device, whether on the job or at home; the latest method of reproducing music with full stereophonic sound; the most advanced form of color movies taken at home either by day or night; plug-in frying pans, electric percolators; bigger and better television, to say nothing of colored telephone extension units all over the place.

In short, we earn the money and spend it for billions of dollars worth of gadgets and then, with true human inconsistency, we either give no thought to protecting this huge investment or begrudge the "peanut" money needed to help us safeguard the very things that make life easier or more pleasant.

To date, we know of no Gallup poll taken to determine the number of home fire extinguishers in use in the homes or apartments of American householders. But it requires no stretch of the imagination to arrive at the conclusion that the total number must be pitifully small. If most of us can afford wall-to-wall gadgets, why can't we afford to protect those gadgets even if we give no thought to the possibility of safeguarding life itself against the tragedy of fire? We are only kidding ourselves if we leave all forms of protection to some distant insurance company while we wail to high heaven if that company is forced to increase fire insurance premiums because of the staggering fire losses we build up year after year.

Many years ago, an internationally known fire chief coined the phrase, "A conflagration is a little fire that got away." He could have said that all the little fires in the nation add up to one giant conflagration which is responsible for a life loss of ten thousand every year and an economic burden beyond all comprehension.

The most efficient fire department on earth cannot cope with the time-lag. Obviously, the best form of fire protection is fire prevention but thoughtlessness, careless smoking habits, improper electrical connections and installations, small children and general human cussedness will continue to cause fires to start and the majority of those fires could be kept out of the statistics column.

We have been thoroughly "educated" to fight infection through the use of first-aid and antiseptics, germicides and bactericides. Why should we not fight the incipient fire or the tiny threat of fire by having close at hand an approved fire extinguisher? Must we continue to live in the horse-and-buggy age when perhaps(?) a bucket of water was the first thought in fire fighting? What if we cannot get to that bucket of water or electrocute ourselves by using water on an electrical fire?

Suitable fire extinguishers for the home, the garage, the outboard motor boat are on the market and are priced low enough to be a superb investment. We need not wait until we can afford a Spanish castle, a baronial manor or ex-King Farouk's streamlined yacht. If we can afford a place to live, we can afford a scientifically designed fire extinguisher to protect our possessions—the greatest of which is life itself.

If we are worried about our decor, take comfort in the fact that home fire extinguishers even come in colors!

It's 148°F to 180°F in this Kiln! Yet AO Head-to-Foot Protection Permits Worker to take Searing Kiln Heat — and Do His Job!

Thanks to American Optical's new Thermalair Respirator and Aluminized Clothing, this man can now do a productive job in temperatures which formerly would have felled him. Application above is a kiln which man enters 4 or 5 times a day for about ten minutes to check moisture content of lumber. The safety director commented: "We tried going in without the respirator and couldn't get past the door."

The AO Thermalair Respirator (the only one of its kind) protects against heat *up to 300°F.* It was developed for use in ovens, kilns, furnaces and dryers when workers must enter these areas for product control, repairs and maintenance. *Here's how the respirator works:* Using the heat exchanger principle, as wearer inhales, heat is removed from incoming air and temporarily stored in the cartridge (not in wearer's respiratory passages). As wearer exhales, the stored heat is expelled from cartridge to the outside air. QUICK FACTS: A great health, time and money saver . . . permits freedom of work movement (no bulky equipment) . . . protects in sub-freezing as well as excessively hot atmospheres.

AO Aluminized Clothing does the rest of the heat protection job — and does it comfortably. The material reflects 90% of radiant heat — and weighs only 50% as much as regular asbestos. It also has superior abrasion resistance to plain asbestos (or duck) with longer safe life. AO Aluminized Clothing is available in a complete line of clothing and gloves including jackets, coats, pants, chaps, aprons, spats, leggings, overalls and hoods.

NOTE: The Hood and Aluminized Window on wearer in photo were developed by AO especially.

Always insist on Trademarked Safety Products

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THE BEST SAFETY DEVICE IS A CAREFUL MAN

SAFETY FIRST

SAFETY FIRST
WALK - DON'T RUN
BETTER BE SAFE THAN SORRY

No employee wants to have an accident! Yet carelessness costs management and labor thousands of days of production and millions of dollars each year. Frequent reminders—particularly in places where accidents can easily happen—keep employees alert to danger and cut costly accidents. These reminders, made often and inexpensively by bright, easy-to-read signs, are an important step in an effective safety program for your company.

Stonehouse Safety Slogan and Reminder Signs are made of enduring, tested materials, and meet American Standard specifications.

* *Write today for our free, full-color, 64 page catalog of thousands of ready-to-ship safety signs, plus information about custom-printed signs to meet your special needs.*

"Signs since 1863"

Stonehouse SIGNS

STONEHOUSE SIGNS, INC., Stonehouse Building, 9th and Larimer, Denver 4, Colorado

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the future shows

Bridgeport, Conn. *June 16–17*

Fourteenth Annual Connecticut Industrial Safety Conference (University of Bridgeport). Sponsored by the Connecticut Safety Society.

Gatlinburg, Tenn. *June 18–20*

Fourth Annual Meeting of the Health Physics Society. G. T. Saunders, Health Physics Society, c/o Kewaunee Mfg. Co., Adrian, Mich.

Los Angeles, Calif. *June 22–26*

Fifty-Second Annual Meeting of the Air Pollution Control Association (Hotel Statler-Hilton). S. Smith Griswold, conference chairman, Air Pollution Control Officer, Los Angeles County, Los Angeles, Calif.

Chicago, Ill. *September 21–25*

Fourteenth Annual Instrument-Automation Conference & Exhibit, (International Amphitheatre). Fred J. Tabery, 3443 S. Hill St., Los Angeles 7, Calif.

Atlantic City, N. J. *October 19–23*

Eighty-seventh Annual Meeting of the American Public Health Association (Convention Hall). American Public Health Association, 1790 Broadway, New York, N. Y.

Chicago, Ill. *October 19–23*

Forty-Seventh Annual National Safety Congress and Exposition (Conrad-Hilton Hotel). R. L. Forney, Secretary, National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill.

Fort Wayne, Ind. *March 15–16*

1960 Northeastern Indiana Safety Conference and Exhibit. Ivan A. Martin, Safety Council Manager, Chamber of Commerce Building, Fort Wayne, Ind.

April 12 was the beginning of Greater Safety Week in New York City, by official proclamation of Mayor Robert F. Wagner. The following day marked the opening of the 29th annual convention of the Greater New York Safety Council. The five-day convention, which annually draws more than 8,000 participants from many parts of the country, was held at the Hotel Statler. Seventy-one sessions, covering almost every field of accident prevention, were addressed by more than 200 principal speakers and panelists.

Three-Day Display

On Tuesday, New York's annual Safety Exposition began a three-day display of the latest developments in safety devices and equipment, protective clothing, driver testing and employee selection methods.

And with a realization that accident prevention still has a long way to go, there were displays also of equipment for the rescue of accident victims, and for the aid and comfort of the injuired. Among the displays in the more than one hundred booths was a new, compact resuscitation kit. It contains a self-inflating bag with a one-way valve and face mask for immediate resuscitation utilizing atmospheric air, and also a foot pump where prolonged artificial breathing is necessary.

A wide variety of new respirators displayed by various manufacturers included an ingenious "heat exchanger" developed to protect workers in areas where intense heat endangers health, as in ovens and kilns where temperatures range from 150 to 300 degrees Fahrenheit. It can be used also for emergency entries in boilers and furnaces for repairs, reducing costly shutdown time. Through use of a cartridge which absorbs heat when the user inhales, the device cools each intaking breath to approximately body temperature. As the user exhales, the stored heat is forced out and the cycle repeats.

Other new respirators filter dust and noxious gases, and an emergency oxygen inhalator weighs as little as three pounds.

Magenta and yellow colors, according to the Atomic Energy Commission's standards for warning notices, gave an eerie appearance to a display of warning signs for use in industry, scientific laboratories and hospitals. They carried arresting messages such as "Caution—Radiation Area," "Danger X-Rays," and "Radioactive Material." An X-ray monitoring company displayed devices for detecting radiation when it reaches a dangerous degree.

A traffic flasher alarm that "yells" a warning to highway work crews when a careless motorist overrides the early warning stop light also attracted attention. It combines a flashing light with a warning horn in a portable unit. At a work location or accident scene the flashing light is placed far enough up the roadway to halt traffic. But if a vehicle overrides the light and runs over an air hose placed ahead of the closed lane, it triggers the horn. The loud blast not only warns the motorist to slow down and move over, but alerts workmen or police and rescue workers.

Testing Devices Shown

A variety of driver testing and visual instruction devices were shown. One display, for the average motorist, consisted of colored transparencies and cutout movable car, truck and bus designs for illustrating 250 different driving and traffic situations. These portable kits and testing devices are used in driver safety clinics conducted by safety councils, local police and other groups.

Protective clothing, goggles, head and foot gear, and safety gloves continued the trend of recent years —which reflects the influence of women in industry—for more styling. The worker who has to wear protective clothing looks less and less like a creature from outer space. New plastics in gloves and in protective clothing for men and women permit a lightness of material that permits more ease of movement and gives a stylish appearance. A new coat, which can

be used by outdoor workers as rainwear or by those working with oils, grease or chemicals, has a coating of vinyl plastic on a nylon base. It is far lighter than conventional rainwear yet fully as strong and has also high resistance to oils, greases and chemicals generally. It is highly durable and can be washed in a washing machine with regular detergents.

Vision-Screening Instrument

A new pushbutton-controlled vision screening instrument, weighing less than 16 pounds for portability, measures quickly and accurately important functions of vision. A rotatable drum containing twelve slides can be controlled manually or automatically.

A new line of ambulance cots, some of which are only 8½ inches high, recognizes the increased use of private cars, especially station wagons, by civil defense volunteers and suburbanites in emergency units.

At the convention dinner the Arthur Williams Memorial Award of the American Museum of Safety for the year's most outstanding safety achievement was given to John A. Dickinson of Bethesda, Md., chief of the codes and specifications section of the building technology division of the National Bureau of Standards.

Safety Points & Comments

A major research program on the causes and cures of accidents was urged by Charles H. Brower, president of Batten, Barton, Durstine & Osborn, Inc. Addressing the 29th annual convention dinner of the Greater New York Safety Council, Mr. Brower said:

"We're spending millions to find out about the dark side of the moon, which, I predict, will show an amazing resemblance to this side. Are we going to zoom off into space before we do the best job we can right here? We need a major research project to find out the unknown causes of many, many accidents."

Mr. Brower declared that such research "will be expensive, but never so expensive as no research." He said this nation's annual accident toll was 91,000 deaths, more than 9 million serious injuries, and an estimated loss of $11,900,000-000.

Mr. Brower said that Americans in general and New Yorkers in particular had shown an unwillingness so far to spend the money that is necessary to reduce these losses, most of which he said were preventable.

Similar appeals for increased financial support for the local efforts at accident reduction were made by Dr. Norvin C. Kiefer, president of the Greater New York Safety Council, and by Mayor Robert F. Wagner.

Dr. Kiefer said too many Americans today accepted accidental deaths, especially in traffic accidents, as "normal wastage"—as deaths from the plague had been accepted until little more than a hundred years ago. Declaring that the deaths and misery caused by disease "had to be 'accepted' because no one knew any effective way" to prevent some of the worst diseases until comparatively recently, Dr. Kiefer said:

Remedy Known

"It is humiliating and tragic that in 1959 we accept, with amazing complacency, the shocking toll of deaths and suffering that results from accidents, because we do know effective ways to combat them. It is a fact that in this supposedly enlightened era, accidents are among the leading causes of deaths at all ages, and are the leading cause of deaths of Americans from the age of one to about 36 years."

The prevention of off-the-job accidents offers a wide field for American industry to reduce its cost losses, an expert of the National Safety Council told the convention. Harry C. Johnson, off-the-job safety representative of the national body, said that industries which have reduced their occupational hazards greatly were still suffering heavy losses because of off-the-job accidents. He proposed that off-the-job safety be made part of the accident prevention program in all industries.

Industry's share in the cost of off-the-job accidents has increased greatly in recent years because of so-called "fringe" benefits underwritten by management either because of law or labor contracts, Mr. Johnson said. These include unemployment compensation, social security, welfare funds, hospital and surgical insurance contributions, and management-sponsored sports activities.

One of the nation's major industrial safety engineers urged that management pay more attention to preventing "near accidents" and "little accidents" as a way of reducing the number of serious injuries, fatalities and heavy losses.

"Little" Accidents Toll High

"The widespread tendency to discount or ignore the 'near' or 'not too serious' accidents is the first step to Fools Paradise," declared E. G. Hutzley, senior safety engineer of the Campbell Soup Company at Camden, N. J. Mr. Hutzley said: "Statistics prove there are more than thirty 'little' or 'near' accidents in relation to every reportable accidental injury. Also, there are 300 relatively minor injuries for every very serious or fatal happening. Many 'little' accidents combine to cause large losses in time, material and manpower."

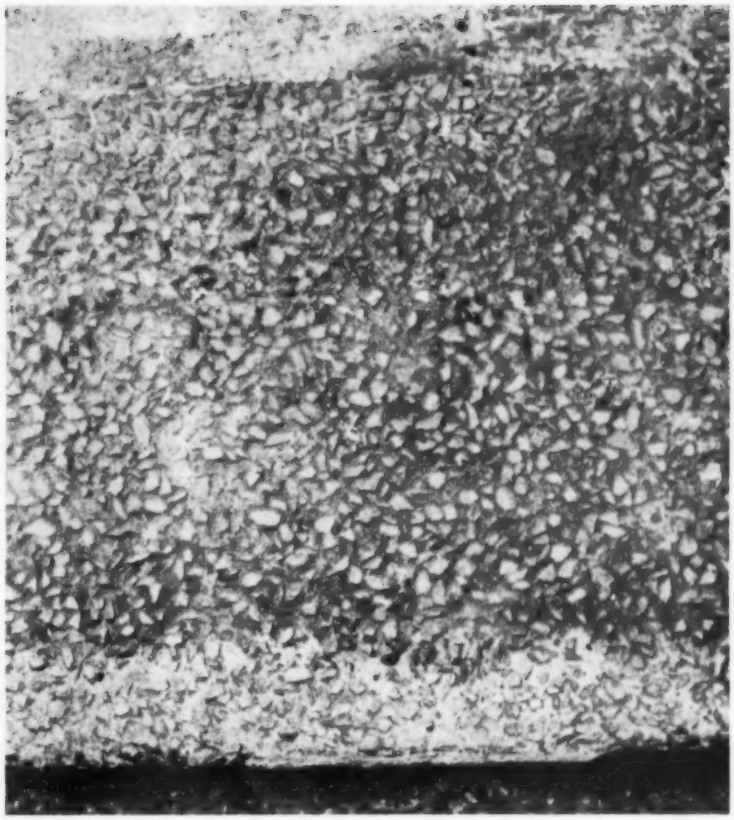
"The same cause that resulted in the loss of a few minutes, slight damage, or first aid injury, might just as easily have killed or seriously injured an employee, badly damaged an expensive piece of equipment, or ruined several batches of product."

Mr. Hutzley said the essence of accident prevention was to anticipate and eliminate the act or omissions that cause accidents. "This is possible in more than 99 percent of all cases given honest assessment," he declared. "There are surprisingly few 'acts of God'."

An accident by some other name becomes easier to prevent. This thesis was expounded by the plant superintendent for a chain of laundry and dry cleaning shops. Edward E. Zane, who substituted the word "preventident" for "accident" in the safety program of the Pros-

(Continued on page 62)

HOW POOR MAINTENANCE RUINS — terrazzo



DANGER SIGNS!
Spalling
Dusting
Broken chips
Cracks
Holes

Terrazzo is made up of 70 percent or more of marble chips and 30 percent or less Neat Portland Cement Matrix. The floor shown above is a Gibraltar floor which utilizes a granite chip instead of the marble chip used in regular portland terrazzo. The granite chip used in this type of floor is extremely dense and does not permit the absorption of the alkaline salts into the chip itself. The alkaline salt present in the deteriorating, harsh cleaner has attacked the grout or cement rather than the dense granite chips and has caused the grout to be eaten away, leaving the granite chips protruding above the concrete portion of the floor.

In normal portland cement terrazzo, this same action would not be present. The marble chip used in portland cement terrazzo is not as dense as the granite chip and would absorb a certain amount of the alkaline salt present in the harsh cleaner. The first action that you might see on a portland cement terrazzo floor would be one of spalling and chipping of the marble chip itself, and possibly the exploding of these marble chips leaving a crack or hole in the floor to cause further disintegration by the continuous action of the alkaline salt as it attacks the grout and the marble chip alike.

Recently a terrazzo floor which should have endured for the lifetime of the building was overlayed with asphalt tile. The deterioration brought about principally by damaging cleaners forced this regretful waste.

Has Natural Enemies

In spite of the great wearing quality of terrazzo flooring, it is very sensitive to certain kinds of abuse. Considering that more than two-thirds of the surface of a terrazzo floor is marble, it is important to know that marble has natural enemies in the chemically opposite elements of acid and alkali. Being of limestone formation, marble is dissolved by acids—slowly by the milder acids such as citric, acetic (vinegar), etc., but very quickly by muriatic, sulphuric and other corrosive acids.

Marble succumbs more slowly to the damaging influence of alkali, but the latter is almost as injurious in the long run. Being porous, marble absorbs alkaline solutions. When these solutions dry, they crystallize and expand, breaking the walls of the minute marble pores. This results in spalling or "dusting." Continued use of alkaline cleaners will gradually increase the rate of disintegration until the floor is entirely ruined.

The National Terrazzo and Mosaic Association in its Terrazzo Maintenance Bulletin states, "Suitable materials for treating or cleaning terrazzo floors will fill the original pores or have no effect on them. Harmful materials increase the numbers and enlarge the pores. Continued use of such harmful materials increases the maintenance problem and costs."

For sealing terrazzo floors, the National Terrazzo and Mosaic Association has this recommendation: **"Terrazzo is benefited by a pene-**

(Continued on page 18)

Take a Firm Stand

Our plant uses over one ton of neoprene each year in shoes sold through our safety store.

This report from the supervisor of safety and plant protection at the Lukens Steel Company's plant at Coatesville, Pa., underscores the extent to which safety engineers and workers alike have come to rely on neoprene shoe soles to give added wear and increased protection against specific hazards.

Neoprene, first produced commercially in 1932, was quickly adopted by shoe manufacturers looking for both longer wear in their products and protection against oils, grease, chemicals, and water. Thus, from the aspect of the safety engineer, neoprene has helped immeasurably to gain far broader acceptance for protective footwear.

While an old established product, neoprene is still new and dynamic in the sense that new forms and styling are continually being developed. This year, for instance, at least two new products are emerging.

One is a sole made to duplicate boned leather in appearance, while still retaining the high performance of neoprene. Such soles, already in use by two important safety shoe manufacturers, are expected to make real contributions to acceptance of safety shoes through attractive styling possibilities.

The second is the so-called "molded-on" construction, in which a sturdy neoprene sole and heel are vulcanized directly to the insole and upper, with no stitching through which liquids can seep.

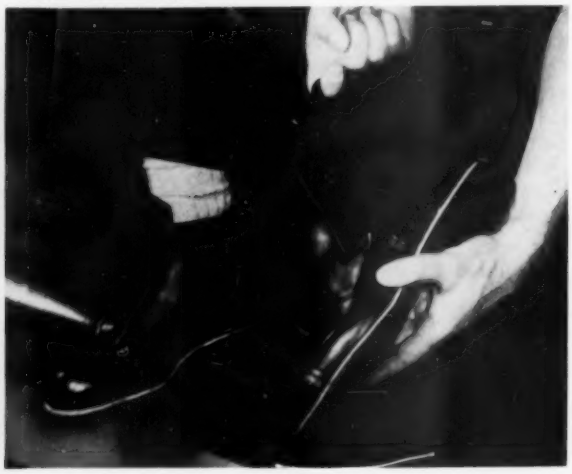
HOW'S YOUR SAFETY SHOE I.Q.?

Each of the seven shoes pictured is a safety shoe. Not all have an impact resisting toe cap, but each has special features designed to let the wearer work in greater comfort and safety in a particular job. Read the clues above each picture and figure out what the wearer does. Answers are on page 26.

1. Clues: neoprene crepe sole, extra thick leather top, laces to toe.

4. Clues: high top shoe, high heel, cord sole.

5. Clues: neoprene composition sole, no laces, elastic panels at top.



on Safety Soles

These are but the latest of a series of variations on the basic neoprene theme to meet varying demands. Through the years, to meet requirements based on wear-life, resistance, comfort, or styling, five major types of soles have been developed: **neoprene composition, neoprene-cord and neoprene-cork combinations, cellular neoprene, and neoprene crepe.**

Composition soles were the first form of neoprene adopted by the shoe industry in its quest for longer wear and greater resistance, and it was on them that the reputation of the long-lasting product was originally built. In case after case—in steel mills where soles had to stand up under the abrasion of hot, jagged slag; in service stations where oils, grease, and battery acid were a constant hazard; in chemical plants, even in such prosaic applications as longer wearing shoes for postmen—reports mounted up on the superior performance of the DuPont product.

A number of developments were made with composition to improve performance. One such was the special sole pattern developed during World War II to avoid slipping of boots used on flight decks of all United States Navy aircraft carriers. This pattern was later carried over into civilian shoes.

To meet requirements where slipping posed an especial problem, **neoprene-cord** soles were developed. In the first types, the cord was arranged in such a manner that each individual length lay perpendicular to the bottom of the sole, its end flush with the bottom sur-

2. Clues: built-up heel, tab of leather on instep, steel arch.

3. Clues: thick sole, neoprene coated upper, gusset stitched to top.

6. Clues: black oxford, neoprene-cork sole, inside corner of heel clipped.

7. Clues: tan oxford, neoprene cellular sole, designed for many jobs.

What types of neoprene soles are available?
Which types are best for your operations?
How the right soles promote safety shoe acceptance.

face. With experience, the belief grew that there was no particular advantage to this rather complex construction, and soles with the cord at random throughout the neoprene structure are now the general rule.

Combinations of **neoprene with cork** particles came soon after. These offer lighter weight, slip resistance, and a certain amount of insulating value to protect feet in such places as freezer rooms.

Soon after the end of World War II, the demand for a lasting sole of even lighter weight and more "bounce" was met with a completely new approach, the **cellular neoprene** sole. To produce this construction, a myriad of small bubbles are introduced throughout the neoprene structure by use of nitrogen-producing organic blowing agents.

Another post-war accomplishment was the **neoprene crepe** sole, a duplicate in appearance and resilience of the older crepe of natural rubber, but longer wearing and lacking the tendency to become gummy and misshapen in the presence of heat or oils.

An interesting feature of both cellular and crepe neoprene soles was the excellent wear reported when they were put into service in industrial locations. Laboratory testing had indicated their resistance to abrasion might not be as good as the earlier composition and combination soles. The real test of wear in service, however, indicated that their resilience allowed them to roll with the punch under heavy demands.

Uses of Neoprene Soles

On these five major classes of neoprene soles, each manufacturer has superimposed his own contributions to produce a variety of soles which can be expected to meet almost any conceivable industrial situation.

Special hazards call for special solutions, and neoprene has been used to solve many of them. At opposite extremes, for instance, there are conductive soles designed to avoid the possibility of sparks from an accumulation of static electricity, and nonconductive soles to protect their wearer from electric exposure.

Fundamentally, in a well-made sole produced by a reputable manufacturer, each type of neoprene sole exhibits the basic characteristics of neoprene:

Oil resistance—one of neoprene's best known qualities—means that soles do not get soft and gummy or spread in the presence of oil or grease, thus giving sure positive traction and longer wear.

Abrasion resistance means soles that will stand up to the toughest wear.

Chemical resistance means long, dependable service in presence of many industrial chemicals.

Heat resistance and low temperature service adds to life in all climates and under many different industrial environments.

Crack resistance adds to wear, avoids crevices through which corrosive substances can reach the inner shoe structure.

Choice of the specific sole type for a given use may depend upon many factors, and generalized recommendations may be dangerous. However, certain broad observations may be made. If the factor considered is presence of oil or caustics, any of the five types can be expected to give good performance. If metal chips, rough slag, or other materials with cutting edges are a prime consideration, crepe soles, particularly the newer laminated crepes, may get the nod. For resistance to heat or cold, each type of sole will perform well; the comfort factor might lead to a cork sole because it will offer some insulating value. On abrasive surfaces, such as cement or cinders, all types of neoprene soles perform well. In combatting slipping, the crepes and cellular neoprenes are inherently better, but many ingenious patterns have been developed to increase performance of other types. Where quantities of water are encountered, composition, crepe, or cellular constructions can be expected to give the best performance.

In any given situation, more than one factor is usually likely to be present. Furthermore, the sole is but one factor in over-all protection and wear-life. Upper material, stitching, and design must also be considered. Good shoe manufacturers know the characteristics of their various models, and can make definite recommendations to meet specific situations.

Always, however, an important aspect for safety personnel is building acceptance for the concept of wearing safety shoes. Remarkable strides have been made, particularly in conditions where the hazards are more readily recognized. As a result, there has been a gratifying reduction in injuries. One manufacturer reports that a broad survey disclosed three percent of the safety shoes it sold were involved in an accident during their wear-life.

There is still room for considerable advance, however, and much of it involves personnel who may not have been sufficiently enthusiastic in adopting safety shoes. Office personnel who have occasion to go into shop or plant areas are particularly vulnerable, because they are not as thoroughly conditioned to the routine of such mechanical areas. Even hospitals have accidents, and, interestingly enough, 14 percent of these involve hazards to feet.

Here neoprene—used to its greatest potential by progressive shoe manufacturers—can make truly dramatic contributions. Its wear-life, on and off the job, offers real economy. Its comfort is such that old-fashioned thinking on safety shoes is completely out of date. And it has made possible styling in safety shoes which open many new doors. Italian styles, ripple soles, and other innovations vie with smart established styles like saddle shoes, mesh summer shoes, loafers, moccasins, and bluchers which defy detection as offering the solid protection of a steel box toe as the greatest single safeguard against toe injuries.

Through long-proven performance, styling, availability, and acceptance, neoprene soles offer the safety engineer real help in helping people to protect themselves.

Pictures by courtesy of E. I. Du Pont de Nemours & Co., Inc.

Safety Maintenance SALUTES

A SAFETY IDEA

"Hot Box" Tile Remover

Everyone who has removed old asphalt tile from floors with a blowtorch is ready to agree the job can be very hazardous, but an employee of the U. S. Army Engineer District, Alaska, at the Anchorage headquarters, thought up the "Hot Box" to reduce the danger. Bryant Flynn, chief of maintenance for the Engineers at Anchorage, is the inventor of the ingenious box to heat floor tile without danger of burns or fire.

As maintenance chief, Flynn was given the job of removing 66,350 square feet of old tile to be replaced with new tile. Wardie W. King, chief of the District's Safety Branch, vetoed Flynn's plans until he could come up with a safer method of removing tile than using a blowtorch for heating. "Why don't you use infra-red heat lamps?" the safety man suggested.

He decided to use the safety supervisor's suggestion. Using his spare time, Flynn licked the problem with a hot box which proved a saver in time and money spent on the job.

He constructed an aluminum box with the bottom and one side removed. On the inside of the top panel he installed eight 250-watt infra-red heat lamps. On the top he installed an ordinary electric switch. Flynn attached 650 feet of extension cord to the Hot Box to permit workmen to proceed unhindered by shorter extension cords when working in long corridors.

The Hot Box is 24 inches long, 12 inches wide and 12 inches deep. In repeated tests and use at the Anchorage headquarters it has proved its efficiency. It brings the tile to be removed to the proper temperature quickly while greatly reducing the threat of fire.

Officials of the Army Engineer District estimate Flynn's tile remover will save over $4,000 in maintenance costs on the headquarters building alone during the next five years. Flynn said the cost of the original box was $41.28. The materials cost $25.72 and the services of an electrician and sheet metal man for four hours cost $15.56.

ISM Boston Chapter

The Greater Boston Chapter of the Institute of Sanitation Management was organized recently to mark the opening of the Institute's 1959 expansion drive. Boston is the first of several new chapters to be organized this year in Akron, Cleveland, Pittsburgh, Kansas City, Houston and other cities. Some 90 sanitation maintenance personnel from leading Boston industrial and commercial firms and institutions attended the meeting; representation was about evenly divided among heavy industry, food processing, building management, hospital and school operations.

Official "blessings" for the new ISM Chapter came from James Roberts, General Manager of the Greater Boston Chamber of Commerce, and Henry I. Jacobs, Supervisor of Sanitation Facilities for the City of Boston, representing Mayor John B. Hynes. Principal speaker at the organizational meeting was Albert J. Burner, Supervisor of Cleaning Standards for the Central Maintenance Division, Port of New York Authority, and President-Elect of the Institute. He spoke on "Professionalization-Our Job In Industrial Sanitation." General Chairman of the meeting was Gerard J. Riley, Executive Secretary of the Institute.

Edward A. Dubois, Supervisor of Building Services and Security, Polaroid Corporation, Cambridge, Mass., was selected Temporary Chairman of the Boston Chapter.

Fig. 1—Chin style mask with an organic-vapor, acid gas, filter canister and carrying case as protection against dusts, sprays and serosols with chlorinated or organic phosphate insecticide formulations. Approved by U. S. Agriculture Department. Not for fumigation work.

Fig. 2—Chest style mask with organic-vapor canister, carrying harness and case, as protection from organic vapor fumigants such as methyl, bromide, carbon tetrachloride, carbon disulphide, ethylene dichloride. Other canisters for work involving hydrocyanic acid gas.

Fig. 3—Fumigator mask with organic-vapor canister, duo convertible back carrying harness, 27" corrugated hose and carrying case. This style of mask keeps canister and inlet away from gas source. With this harness, regular or extra-large canisters can be used.

The development of protection against insects, parasites and fungi has been rapid and of great economic value. A start was made through the use of smoke; later, dusts and sprays became accepted methods. Mecurial, arsenious, sulfur and lead compounds were prevalent. Later, fumigation with HCN accounted for a large part of the control of insects in residences and business places. When DDT was developed and made available, it was thought that fumigation was a thing of the past since the mere sprinkling or spraying of this material gave excellent kills for long periods of time.

Where resistant strains of insects have appeared, however, the use of fumigation has increased.

The residual effect of chlorinated insecticides giving prolonged killing ability has much merit where insect resistance has not developed. However, many conditions require an immediate kill with no residual ability and so, as a supplement to fumigation, organic phosphates or nerve gases are being used more and more for pest control.

Insecticides

Sprays—Aerosols—Dusts: Insecticides mixed in oil or water emulsions are harmful to you in proportion to the concentration and potency of the active ingredient. The active ingredient in the insecticides may be as harmless as a pyretheum or as killing as an organic phospate.

Gas mask canisters will readily protect you from the harmful insecticides that are used today. Their general construction includes a toxic filter for preventing very small particles from being inhaled and a sorptive chemical for taking up the gases and vapors which pass through the toxic filter. Oils are readily taken care of by activated charcoal, and the toxic filter often helps. The sorptive chemicals either **combine** chemically with harmful gases or **collect** them, so that when you breathe through a canister NO harmful ingredients come through with the air you breathe until the break-down period. (However, see later special precautions for hydrocyanic acid gas.)

When insecticides are mixed with inert dusts or powders, a toxic filter is necessary, as the greater proportion of all parts of the formula are often captured and held by the toxic filter.

Organic Phosphates (Nerve Gases): Organic phosphates, such as parathion, malathion, phosdrin, etc. are effective because their insecticidal properties are high for a given time, then disappear com-

Care and Maintenance of Masks

The gas mask should be given the best care and be ready for use on a moment's notice. Replace any parts that show evidence of wear or are broken. Proper parts must be used to maintain approval.

The facepiece and corrugated hose, with canister removed, should be cleaned after each use with soap and water. Rinse with water and hang upside-down to dry. (The facepiece may then be disinfected with a quaternary ammonium compound such as Roccal, Phemerol or Zephiran in strengths recommended by the manufacturers. Rinsing after disinfecting is not necessary when using quaternary ammonium compounds. Hang the facepiece upside-down to dry.)

Check the exhalation valve at the bottom of the mask after washing to make sure that no dirt or other foreign

(Continued on page 16)

SAFETY TIPS FOR FUMIGATING

pletely. They have been used to spray fruit prior to picking, vegetables, etc. prior to harvesting. Their high toxicity is required to control insects which have developed a resistance to the effects of chlorinated hydrocarbons (such as DDT, aldrin, dieldrin, etc.). In humans, they affect chemically the functions of nerves and muscles—and can be very dangerous if high concentrations or long exposures in low concentrations are encountered without protection. Large doses of atropine administered by a physician should be used to overcome their effect. Standard canisters for organic vapors with toxic filters are effective in protecting against organic phosphates. See Figure 1.

Fumigants

Gases that stop the proper use of oxygen by a body (insect, animal or human) or affect the nervous system, may be used as fumigants. However, penetrability, explosibility, weight, and ease of handling are some of the things that govern the selection of the fumigant used.

Hydrocyanic acid gas (Prussic acid, HCN) is the old standby. Its rate of penetration is very rapid; it is explosive; it mixes readily with air (being one of the lighter fumigants); and it is available in several convenient forms. It is comparatively easy to collect in a gas mask canister—in fact, tests at the U. S. Bureau of Mines have shown that it will go through your skin and probably would cause death before any would come through a FRESH gas mask canister when in a 2% concentration. **Do not stay in an HCN atmosphere longer than five minutes. (See special precautions for further information.) Be sure to use a fresh canister on each job.**

Methyl bromide (CH_3Br) penetrates and leaves an area less readily than HCN. It is somewhat less explosive. It is almost three times as heavy as air and settles if there is little circulation, giving greater concentrations at the bottom of bins, near to the floor, etc. Since it is contained in pressure tanks, and handy metal cans, it is easily handled.

Carbon tetrachloride (CCl_4), carbon disulfide (CS_2) and chloropicrin (CCl_3NO_2) mixtures use the high insecticidal value of carbon disulfide, the counter explosiveness of carbon tetrachloride, and the smell of chloropicrin to make a more ideal fumigant. It is heavier than air and so works downward like methyl bromide. It is non-explosive (unless separation occurs) and is readily recognized by the tear gas and vomiting gas effect of the chloropicrin.

Other fumigant mixtures and single gases are used. All are highly hazardous and toxic. For normal fumigation situations, canister masks give excellent protection. See Figures 2 & 3. Use **fresh** can-

isters. In the manufacture of these fumigants, a serious leak in an enclosed area may produce concentrations that may require compressed air or self-contained breathing apparatus for full respiratory protection. Be aware of those fumigants that penetrate the skin and limit exposure to a very few minutes unless completely impermeable clothing is carefully donned and worn.

Wherever a heavier than air gas has remained in a silo or grain bin, there tends to be stratification—the respirable air floating to the top and the heavier gas sinking to the bottom. This means that there will be less or no oxygen in the air at the bottom. Canister mask equipment works by letting the good portion of the air (oxygen) come through the canister and stopping the harmful portion (the fumigant or insecticide) within the canister. If the above conditions indicate that the area has little or no oxygen in the air, DO NOT USE A CANISTER MASK. Use hose masks, compressed air masks or self-contained breathing apparatus. Residences, working areas of grain elevators, business places, etc. have sufficient circulation so that stratification rarely occurs.

Special Precautions for Hydrocyanic Acid Gas

1. Although this canister will remove concentrations of 2 percent hydrocyanic acid gas from the air and protect against entry of the gas through the lungs, these high concentrations are absorbed through the skin rapidly enough to cause serious poisoning after 3 minutes' exposure. Likewise 1 percent is dangerous from skin absorption after 10 minutes, and 0.5 percent may produce symptoms after one-half hour.

These concentrations which are dangerous from skin absorption are very much higher than those dangerous to life if no adequate respiratory protection is provided. Without respiratory protection as little as 0.048 percent is immediately dangerous to life, and 0.012 to 0.024 percent will cause dangerous illness after 30 to 60 minutes' exposure.

The odor of hydrocyanic acid gas is characterized as that of bitter almonds. It also produces a faint taste that is nauseating to some persons. However both the odor and taste are of too low intensity and too pleasant to be depended on to give a distinct warning of harmful situations. Tobacco smokers allege that the presence of even small amounts of the gas imparts a pronounced foreign taste to the smoke.

The signs and symptoms of oncoming poisoning and serious poisoning may be any or all of the following: Nauseating odor or taste, choking air hunger or breathless sensation, quickened respiration and pulse, flush skin, pricking and warm skin sensation, trembling, pounding heart, dizziness, weakness, collapse, unconsciousness, cessation of respiration, and death.

When no adequate respiratory protection is provided, the progress of the poisoning and symptoms from slight and mild to severe may be very rapid. With fatal concentrations of gas, collapse and unconsciousness may ensue after a breath or two of the gas, with the victim experiencing but few, if any, of the symptoms of oncoming poisoning previously mentioned.

When respiratory protection in the form of gas masks is afforded and the mode of entry is through the skin, the gas is acquired more slowly and serious poisoning attained at a somewhat slower rate. This is conducive to the appearance of more symptoms of oncoming poisoning.

2. The wearer of the mask should advance into gas cautiously, making certain that the mask is gastight and functions properly. He should always be alert to any symptoms of possible oncoming poisoning, and if any signs of leakage of gas or symptoms of poisoning occur he should return to fresh air immediately with a minimum of exertion.

3. An attendant in fresh air with a mask immediately available for rescue purposes should keep in communication at all times with persons in gas, and a life line should be used in all unusually dangerous situations. Attendants and persons using masks should be acquainted with resuscitation procedures and equipped to treat immediately any cases of poisoning occurring to either the person using the mask or persons rescued. The most important steps in treatment are:

(a) Get the person to fresh air, keep him quiet and warm.

(Continued on page 18)

Care and Maintenance of Masks

(from page 14)

material has become lodged between it and the valve seat.

Mask equipment should be kept in the container provided and stored in a cool, dry location *that does not have widely varying temperature changes.*

To prolong the life of rubber parts of a gas mask, a frequent thorough kneading of the rubber is suggested—once a week is fine, once a month is good, and certainly once a year should be the minimum. Stretch the rubber firmly. Roll the rubber between your hands or fingers. While doing this, inspect for cracks, holes or breaks that would let hazardous gases come through to you while wearing the mask.

A rubber mask has the highest quality natural rubber in all its parts. Its life is very long—usually as much as six years or more. Certain oil emulsions will make rubber swell but in the use of insecticides, little deterioration will occur if masks are thoroughly cleaned of oils or similar contaminants after use.

Synthetic rubber facepieces are also available—but many users prefer the good fit of natural rubber, freedom from effects to the skin, pliability under cold conditions, etc.

SAFETY EQUIPMENT FOR HANDLING

. . . *Phosphorus Pentasulfide*

The correct usage of personal protective equipment for phosphorus pentasulfide requires the education of the worker in proper employment of the equipment available to him. Under conditions which are sufficiently hazardous to require personal protective equipment, its use should be supervised and the type of protective equipment selected should be capable of control over any potential hazard.

The following personal protective equipment should be used when indicated:

Eye Protection

Chemical Safety Goggles: Cup-type or rubber framed goggles, equipped with the approved impact resistant glass or plastic lenses, should be worn whenever there is danger of phosphorus pentasulfide coming in contact with the eyes.

Spectacle-Type Safety Goggles: Metal or plastic rim safety spectacles with unperforated side shields which can be obtained with prescription safety lenses or suitable all plastic safety goggles may be used where continuous eye protection is desirable, as in laboratories. These types, however, should not be used where complete eye protection against phosphorus pentasulfide is needed.

Face Shields: Plastic shields (full length, eight inch minimum) with forehead protection may be worn in addition to chemical safety goggles where complete face protection is desirable. Chemical safety goggles should always be worn as added protection where there is danger of material striking the eyes from underneath or around the sides of the face shield.

Respiratory Protection

Severe exposure to hydrogen sulfide may occur in tanks during equipment cleaning and repairs, when decontaminating areas following spills, or in case of failure of piping or equipment. Employees who may be subject to such exposures should be provided with proper respiratory protection as described below:

(Note: Respiratory protective equipment must be carefully maintained, inspected, cleaned and sterilized at regular intervals, and always before use by another person.)

(a) Self-Contained Breathing Apparatus which permits the wearer to carry a supply of oxygen or air compressed in the cylinder, and the self-generating type which produces oxygen chemically, allow for greater mobility. The length of time a self-contained breathing apparatus provides protection varies according to the amount of air or oxygen supply carried. Cylinder (or compressed) oxygen should not be used in tanks or other confined spaces.

(b) Positive Pressure Hose Masks supplied by externally lubricated blowers. Since these masks depend on a remote air supply, they should be used only where conditions will permit safe escape in the event of air supply failure. Care must be taken to locate the blower air source in an area which is free of air contaminants.

(c) Air-Line Masks supplied by plant compressed air are suitable for use only where conditions will permit safe escape in case of failure of the compressed air supply. Such masks should be used only in con-

The accompanying material is from "Chemical Safety Data Sheet for Phosphorus Pentasulfide" published by the Manufacturing Chemists' Association, Inc. The complete data sheet, in addition to this information on personal protective equipment and fire fighting, outlines the properties, hazards, engineering control, employee safety, handling and storage, equipment cleaning and repairs, waste disposal, medical management, and first aid. Copies of the complete data sheet (SD-71) are available at 30¢ each from: Manufacturing Chemists' Association, Inc., 1825 Connecticut Ave., N. W., Washington 9, D. C.

junction with a suitable reducing or demand-type valve, excess pressure relief valve, and filter. The compressed air should be checked frequently to make certain that harmful gases from the decomposition of the lubricating oil used in the compressor, or impure air supply, are not present.

Head Protection

"Hard" hats should be worn where there is danger from falling objects. If hard hats are not considered necessary, soft-brimmed hats or caps may be worn to give protection against dust.

Foot Protection

Leather or rubber safety shoes with built-in steel toe caps are recommended for workers handling drums of phosphorus pentasulfide. Rubbers may be worn over leather safety shoes. Rubbers and shoes should be thoroughly cleaned and ventilated after contamination.

Body, Skin and Hand Protection

Sustained or intermittent skin contact with phosphorus pentasulfide may produce dermatitis at the site of contact. It is imperative that contaminated clothing be removed promptly and laundered before reuse. Affected areas of the body should be washed thoroughly with soap and water (except the eyes). As a general hygienic measure, facilities for personal cleanliness should be provided and washing before lunch and at the end of the work day should be encouraged.

Fire Fighting

Dry chemical extinguishers may be used provided the entire bulk of burning material is covered. Small phosphorus pentasulfide fires can generally be smothered with dry sand or by carbon dioxide. It should be borne in mind, however, that in the use of any of these three extinguishing agents there is always the possibility that the phosphorus pentasulfide may self-ignite due to its relatively low auto-ignition temperature.

Fires in the open or in well-ventilated areas can be extinguished by flooding with water, but large quantities of hydrogen sulfide are evolved. It is important that fire fighters wear self-contained breathing apparatus because of the combination of sulfur dioxide, hydrogen sulfide, and phosphorus pentoxide, resulting from the combustion of phosphorus pentasulfide. Phosphorus pentoxide is present as a dense white smoke with a strong acid reaction on the skin, which makes it advisable to wear protective clothing when fighting a fire.

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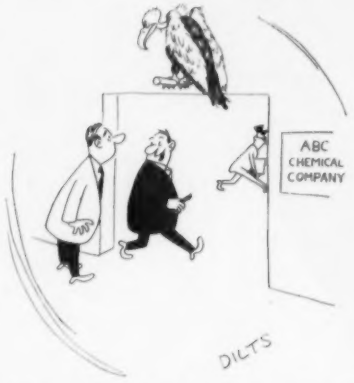

"Reports of hazards in this area are greatly exaggerated."

Fumigating Tips
(from page 16)

(b) If breathing has ceased or become impaired, give artificial respiration immediately and continue without stopping for any purpose until normal voluntary breathing is resumed.

(c) In the meantime have someone send for a doctor and summon help.

(d) Have someone remove clothing and wash body with water, particularly if the victim has been perspiring and if poisoning by skin absorption is suspected. The gas is absorbed readily by clothing and is very soluable in water so that by failure to remove the external application of gas the exposure will be continued even though the patient is in fresh air.

A chest style canister will protect you for 30 or more minutes in the highest concentration for which it is approved (1%, 2%, 3%). When it breaks down, you will notice a faint odor of the gas which will increase slowly at first, then more and more rapidly, giving you warning **to get out of the contaminated area at once.** Chin style canisters have about ⅛ of the life of chest styles and super-size canisters about twice as long a life.

Be familiar with your gas mask and know its safety as well as its limitations **before use.** Study the instructions. Practice using the gas mask periodically. For further information, copies of a bulletin, "Useful Information For Users of Insecticedes & Fumigants," are available upon inquiry to the Editor.

Pictures by courtesy of Acme Protection Equipment Co.

Poor Maintenance
(from page 9)

trating (not surface) seal which prolongs hydration of the cement to provide color density and longer life on new terrazzo—and on old terrazzo reduces penetration of water, stains and grime. The urgency of the need of such a penetration treatment varies with the floor. This Association recommends that the use of purely surface waxes, lacquer, shellac or varnish preparation, and 'good for anything' materials be avoided."

For cleaning, the National Terrazzo and Mosaic Association makes this recommendation, **"Use a neutral liquid cleaner as recommended by member firms of the National Terrazzo and Mosaic Association. The cleansing agent must be free from alkali, acid, metallic salts or other strong ingredients that may ruin the floor."**

Protected with an approved seal that was designed primarily for terrazzo, the floor can be regularly maintained by damp mopping with a neutral cleaner followed by buffing to renew the rich lustre. This simple, safeguarding treatment and maintenance can guarantee "full life" to make terrazzo one of the low cost floors if measured by its length of service.

Coming up in the July issue of "Safety Maintenance" will be an article on "How Poor Maintenance Ruins Magnesite."

Material by courtesy of Hillyard Chemical Co.

For a copy of booklet described on opposite page, use Key # F-4 on card on page 1.

New painting system relieves eye strain, reduces fatigue and provides greater safety for workers in modern road-paving equipment plant at Mattoon, Illinois.

Pittsburgh COLOR DYNAMICS® Improves Productive Efficiency in New Blaw-Knox Factory

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THE NEW Blaw-Knox plant at Mattoon, Illinois, is another convincing example of the improvement in productive efficiency, safety and morale resulting from the use of Pittsburgh COLOR DYNAMICS.

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● **The interior** of this entire plant was painted according to the principles of COLOR DYNAMICS. The beneficial effects of this painting system are summarized in this comment by A. J. Cox, general manager of the Blaw-Knox Construction Equipment division:

● **"We selected colors** for interior walls and ceiling to create more cheerful surroundings for our workers. Stationary as well as moving parts of machines were painted in colors that help operators see their jobs better. Eyestrain is relieved. Nervous tension and physical fatigue are reduced. Safety colors mark hazard areas and safeguard workers against dangers of time-loss accidents.

● **"Our experience** since opening the plant confirms our judgment that properly planned colors are a boon to management and workers alike. They are an aid to greater productivity. The pleasant environment enhances morale. Our entire work force takes pride in our plant's appearance. Work areas are kept clean, simplifying housekeeping. The cheerful and pleasing appearance helps us to recruit new employees in an area where skilled labor has been hard to get. And we enjoy all these benefits at no greater cost than conventional painting."

● **This new Blaw-Knox plant** is only one of thousands of factories in which productive efficiency has been improved by the use of COLOR DYNAMICS. Try it in your plant—in a department or on a machine or two—and see the difference it makes.

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(For details, use Key # F-5 on card on page 1)

Injury Rates Decline In 4th Quarter 1958

The all-manufacturing injury-frequency rate decreased from 11.5 disabling injuries per million man-hours worked in the third quarter of 1958 to 10.5 in the fourth quarter, according to preliminary reports compiled by the U. S. Department of Labor's Bureau of Labor Statistics.

This decrease, however, was somewhat less than usually occurs in the fourth quarter. The rates for October and November 1958 were slightly above those for 1957 and the average for the quarter was a fraction above the fourth quarter rate for the previous year.

Low rates during the first 8 months of 1958 held the average for the year at 10.7—a rate 6 percent below the final 1957 figure and the lowest annual rate on record for manufacturing.

Improvement of one full frequency-rate point or more between the third and fourth quarters was recorded by 63 of the 135 individual industry classifications for which comparable data were available. Changes of less than 1 full point were reported by 54, and significant increases were shown for only 18 industries. On an annual basis, 56 out of 138 industries recorded improvement; 69, changes of less than 1 full point; and only 13, significant increases.

Biggest Changes

The most outstanding increase over the year occurred in the poultry dressing and packing industry, with an increase from 37.1 in 1957 to 45.8 in 1958. The largest decrease was recorded by steel foundries, with a rate of 15.0 in 1958, compared with 20.7 in 1957.

A total of 21 industries achieved a record of fewer than 5 disabling injuries per million man-hours worked in 1958, compared with 18 such records in 1957 and only 9 in 1952. The most outstanding records for 1958 were: radio tubes—2.1; explosives—2.2; synthetic rubber—2.3; synthetic fibers—2.8; aircraft—2.8; miscellaneous communication equipment—2.9.

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CHARLESTON RUBBER COMPANY
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(For details, use Key # F-6 on card on page 1)

by **KENNETH BOWMAN**
Supervisor, Sanitation Dept.
Delco-Remy Div., General Motors Corp., Anderson, Indiana

No one can ignore sanitation. The health, safety and morale of employees, all affected by sanitation, directly affect production. Every business has some form of sanitation, but is it effective? It has been estimated that over $4 billion dollars is spent annually nationwide in keeping plants and buildings clean. It has been further estimated that 30% of this expense or 1 billion, 200 million dollars is being spent ineffectively because management has failed to recognize the potential savings and increased efficiency that are inherent to sanitation.

In the establishment of any sanitation program the first step is to take a survey of your present system. The cost of cleaning isn't the only deciding factor. Other factors should be considered such as:

(1) Degree of cleanliness required or desired.

(2) Effective supervision.

(3) Efficient utilization of manpower.

(4) Employee equalization of work.

(5) Method and procedure application.

(6) Equipment and material usage and control.

Attention should be given as to how these items apply to your present system of cleaning and whether or not your company is realizing the true value of sanitation. The desired degree of cleanliness to be maintained is determined by management, and is based upon economic conditions of manpower availability and cleaning frequencies.

In June, 1954 at Delco-Remy Division, General Motors Corporation, there was started a system of modern sanitation under a cost savings project. It was predicted that a possible 15% improvement could be gained in the cost and efficiency of cleaning by proper organization and supervision. A Sanitation Department was established as a separate section of the Maintenance Division, Plant Engineering Department. A General Sanitation Supervisor was appointed to plan, organize and administer the reorganization of cleaning. Planned sanitation programs have been established and are currently operating in the ten plants in the Anderson, Indiana area. Indirect supervision of sanitation employees was eliminated by placing the employees under the direct control of sanitation supervisors. An entirely new approach to sanitation was initiated in regard to employees, supervision and the system of cleaning. It was through the interest, enthusiasm and efforts of the sanitation supervisors that the project was completed. It resulted in a realization of cleaner plants with the employees being used more efficiently and more economically.

It was by obtaining information at clinics, investigating other sanitation programs, gathering available published information, establishing methods and procedures, and developing job assignment rates that Delco-Remy was able to start working on its system of modern sanitation.

The actual development of a sanitation program is a time-consuming process. It was found that it took two supervisors, working full time, in excess of one month to set up a sanitation program for one plant of approximately 1,500 employees. But the supervisor who was to execute the program received valuable training while helping to develop its formation. After it was put into operation, it took from three to six months to have it operating efficiently.

A definite procedure should be followed in the development of a sanitation program. The following step by step process has proven very satisfactory:

1. Contact Plant Supervision and obtain management support on the proposed program.

The initial contact with plant supervision on the proposed program has a direct bearing on whether the program will be a success or a failure. Gaining management support to encourage "employee participation" is necessary or the program is faced with an impossible task. At Delco-Remy each employee is expected to help in the housekeeping of his own work area and the plant facilities. The responsibility for the appearance and condition of the plant does not rest entirely with the Sanitation Department, but must also be assumed by the plant supervision and employees.

2. Define the types of work areas.

The proposed work is divided into different types and confined to definite areas. Assignment areas will vary with the respective plants. Basic areas can be defined and expanded depending upon the particular circumstances. Suggested areas often include departmental sweeping, plant mopping, offices, cafeterias, hospitals, restrooms, lockerrooms, light washing and special cleaning.

3. Determine the type of cleaning and frequency.

Determination of the amount of

work that needs to be done is the primary basis of any sanitation program. It should be recognized that there is a certain amount of cleaning that must be done each day, some that must be done semi-weekly, weekly, semi-monthly, monthly, semi-annually or annually. Determining the frequency with which the cleaning should be done is relatively difficult, as well as determining the actual type of cleaning.

4. Obtain or make plant layouts showing departments, aisles and areas in detail from blue prints or tracings—to be used in measuring and calculation.

The length of time required to complete any sanitation assignment will remain relatively the same if each time the assignment is performed, the area is in the same condition. Thus, the frequency with which a plant or department must be cleaned becomes a primary consideration when determining how many employees are needed to perform the cleaning assignments. This frequency will vary with the length of time the area is used each day, the number of people working, the degree of housekeeping exercised, and the number and types of machines in operation.

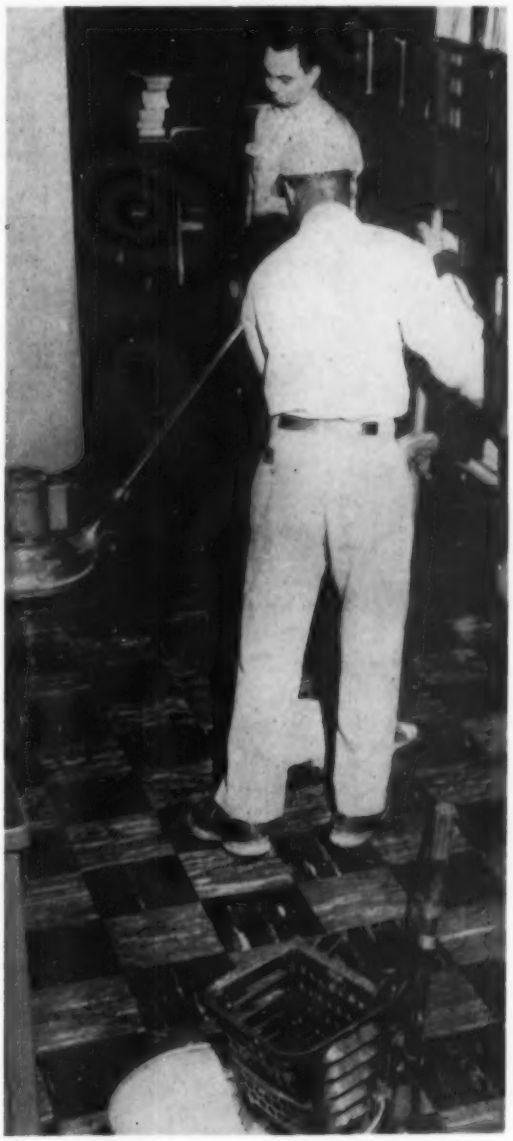
5. Determine methods and procedures.

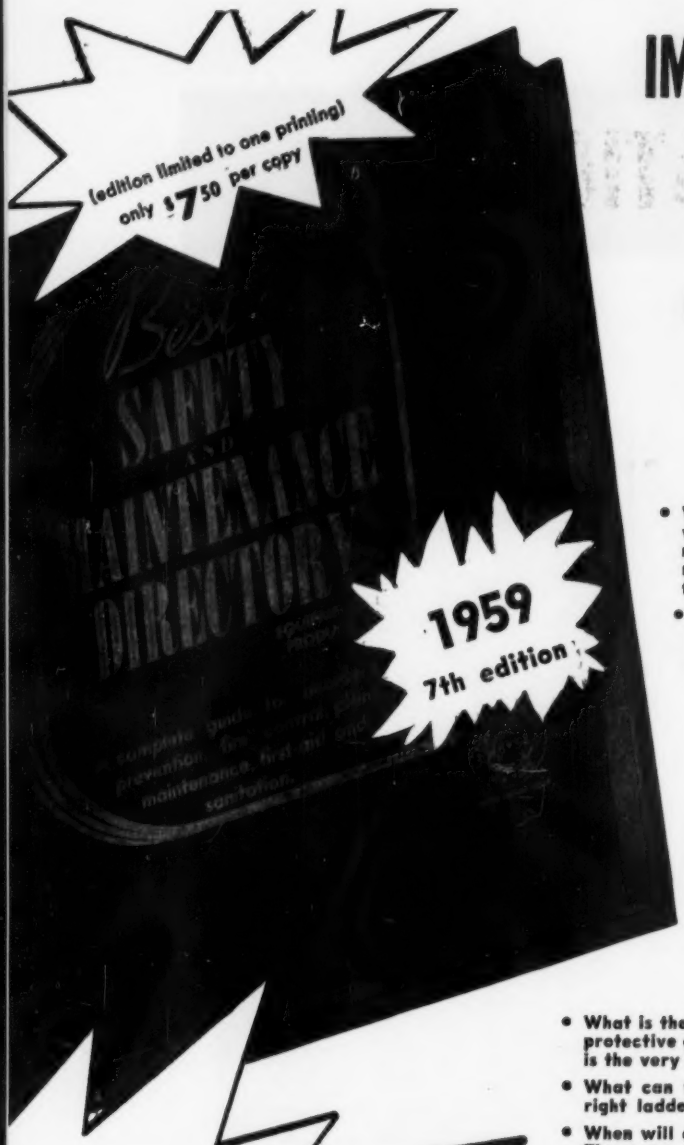
Methods and procedures are the most important parts of a sanitation program. Without well planned methods and procedures, no sanitation program can be successful. They should be determined and placed into the program as it is being developed. This is necessary before job assignment rates can be applied to any given job assignment.

6. Establish job assignment rates.

Job assignment rates are used to

(Continued on page 52)





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- What are the most economical types of materials handling equipment for you?
- What is the importance of a uniform code for safety signs and signals . . . where can you find materials which will fit a planned program?
- What are the essentials for hand soaps and cleansers to protect the skin . . . the types of protective creams to prevent skin rash?
- What are the various types of electrical equipment approved by the Underwriters' Laboratories for specific conditions of hazardous gases, vapors and dusts . . . who makes them?
- What are the vapor hazards of flammable liquids . . . what fire prevention containers and equipment will do exactly the right job?
- What is the range of protective clothing, such as 70 different types of protective gloves . . . the specific merits and uses of each one—which is the very best for you?
- What can you save in time, money and production by selecting the right ladder for an operation?
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Answers to Safety Shoe Quiz On Page 10

1. Roofer's shoe. The neoprene crepe soles are tar resistant and provide nonskid footing for workers on steep roofs. Since the side of the shoe is often braced against the roof, the rough upper leathers are of double thickness to give longer life. The shoe is laced to the toe, sneaker fashion, for easier flexing. This prevents pinching across the toes when the roofer works in a squatting position.

2. Lineman's boot. The heel is built up to hook the pole step, and the extra flap of leather on the instep takes the scuffs as the shoe is dragged against the pole. The steel plate reinforcing the arch provides a built-in platform for the lineman, who is forced to stand on narrow spikes which could put his foot to sleep in ordinary shoes. Sleeping feet are regarded as a potential death trap because they may give the lineman the sensation of falling. If he reaches out to save himself, he may grab a hot wire.

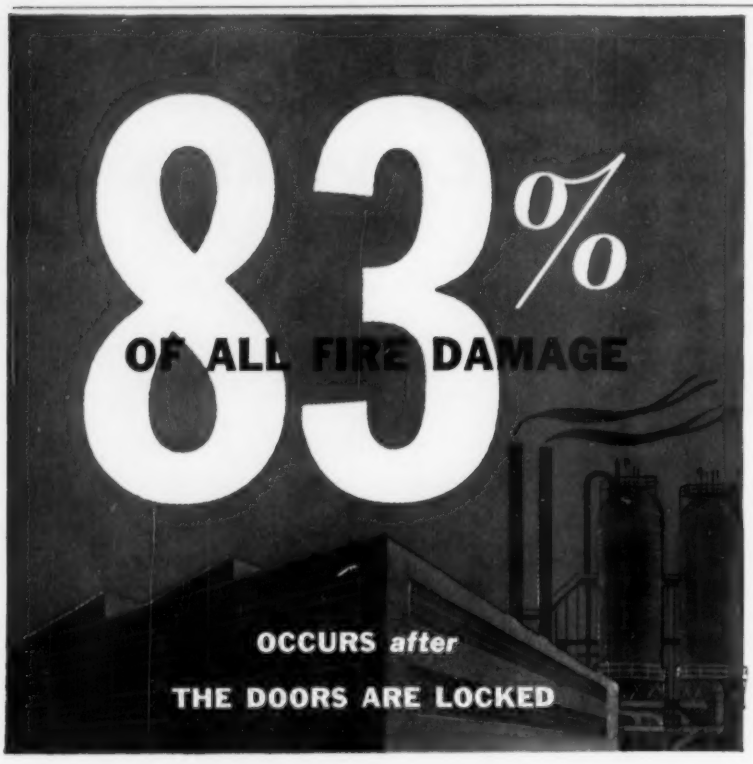
3. Chemical worker's waterproof boot. The thick tread gives sure footing on wet floors, and the neoprene coating protects the waterproofing compound from chemical attack.

4. Logger's boot. The high heel throws the weight onto the ball of the foot and helps a woodsman keep his balance while scrambling over logs. The logger heel is also popular among construction workers and field engineers who must clamber over steep banks and rocks. The cord sole is used for nonslip qualities. The high top protects the ankle against brush burns, and the tongue, or gusset, is stitched to the top in case the wearer steps into shallow water.

5. Foundry worker's boot. The elastic side panels allow the wearer to whip the boots off in a flash should molten metal splash on the uppers. Welders like the laceless feature, too, because sparks burn through the laces of regular shoes. A foundryman prefers the high tops to keep out sparks and hot sand. The neoprene sole resists heat and the oil found on many plant floors.

6. Policeman's oxfords. The neoprene-cork sole is resilient, insulates the feet against hot and cold pavements, and lends surefootedness. Special pains are taken to make the shoes squeakproof, to aid in stalking wrongdoers. The clipped corner on the inside of the heel, adopted from World War II paratroopers boots, is designed to keep a policeman from catching his heel in his pants leg while running.

7. One significant clue was omitted. This good looking blucher oxford has a steel cap in the toe, is a fully approved safety shoe for industrial wear, yet is attractive for dress occasions. The neoprene sponge sole is light and extremely comfortable, yet resistant to oil, heat and abrasion. Who wears it? Many people in general industry and practically everyone should during off-the-job activities. Available in many styles.



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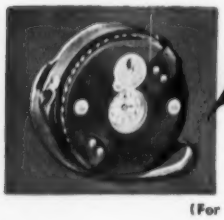

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(For details, use Key # F-7 on card on page 1)

SPOT ACCIDENTS IN ADVANCE

PART 2

Where Should Accident Prevention Efforts Be Concentrated?

The handling of materials, the use of handtools and the operation of machines are encountered in many industries other than boiler-shop-products. Consequently, the recent analysis of injury and accident causes in the boilershop-products industry by Frank S. McElroy and George R. McCormack of the Division of Industrial Hazards, Bureau of Labor Statistics, U. S. Dept. of Labor, should be enlightening to safety engineers and safety directors in other areas of metal working and fabrication.

The information for this study was collected in personal visits to 136 plants that employed nearly 28,000 workers. The Bureau representatives transcribed the following data from the original accident records of the plants:

a. place where the accident occurred;

b. nature of injury and part of body injured;

c. object or substance producing the injury;

d. type of accident (how the injured came into contact with the injuring material);

e. hazardous working condition and/or unsafe act leading to the accident.

In Part 1 of this article, published in the May issue of "Safety Maintenance," it was shown that more than three-fourths of all the reported injuries involved handling materials, using handtools, and operating machines. Of the total 2,017 disabling injuries, the parts of the body most frequently injured were: foot or toe (22.3%), hand or finger (20%), back (13.8%), eye (13.1%), trunk (10.1%), leg (9.8%), head (5%), arm (4%), general body (1.9%).

The nature of the injuries was: bruises and contusions (24.2%), strains and sprains (21.1%), fractures (18.6%), cuts and lacerations (14.3), irritations from foreign bodies (9.1%), burns and scalds (4.3%), amputations and enucleations (2.6%), hernias (2.3%), welder's flashes (2.3%), other (1.2%).

The objects that caused these injuries were: metal stock (23.4%), assemblies (12.4%), chips and particles (11.9%), handtools (7.4%), working surfaces (6.3%), machines (5.2%), hoisting apparatus (4.3%), and other (29.1%).

Accident Types: The first step in accident analysis is to identify and classify the events which culminated in injuries. The classification of these events into groups of accident types creates a pattern which indicates the relative importance of the events which must be prevented from occurring if injuries are to be avoided. This relative importance is not measured simply in numbers of occurrences—it is a function of both the frequency of occurrence and the severity of the resulting injuries. Injury-frequency rates can be reduced most rapidly by concentrating accident-prevention efforts upon the kinds of accidents which occur most often. Humanitarian interests, employee relations, and operating cost elements, however, may dictate that first efforts should be directed to preventing those accidents which tend to produce the most serious injuries.

The accident pattern developed in this study highlights five general types of accidents in terms of volume of frequency of occurrence. (See chart 4.) It is interesting that this pattern was essentially the

same for all major segments of the plants surveyed—there were no significant differences when the reports were tabulated in terms of plant products or on the basis of plant size. **In volume, the five most common types of accidents were:**

(a) Cases in which workers were struck by moving or falling objects, accounting for one-third the total volume.

(b) Cases of overexertion, amounting to over 14 percent of the total.

(c) Cases in which the worker fell—over 12 percent of the total.

(d) Cases in which the injury was inflicted by pressure, friction, or abrasion—nearly 11 percent of the total.

(e) Cases in which the worker was pinched or crushed between objects—over 10 percent of the total.

An evaluation in economic terms, however, presents a somewhat different pattern of relative importance. Here the total amount of time lost or charged represents an approximation of the economic losses resulting from the various classes of accidents. Both the average severity of the resulting injuries and the volume of cases are factors in these aggregates; e.g., a low volume of serious injuries may produce the same amount of time lost or charged as a high volume of relatively minor injuries. **In terms of total time lost, the top-ranking varieties of accidents were:**

(a) Cases in which workers were struck by moving or flying objects—36 percent of the total time lost or charged.

(b) Cases in which workers were caught in, under, or between objects—24 percent.

(c) Falls—12 percent.

(d) Cases in which workers struck against objects—7 percent.

(e) Contact with radiations, caustics, and noxious substances—7 percent.

(f) Overexertion—7 percent.

A quite different pattern of relative importance emerges when the general classes of accidents are rated in terms of the average severity of the resulting injuries without regard to the volume of cases involved. **On this basis of average time lost per case, the most important accident categories were:**

(a) Cases in which workers were caught in, under, or between objects—192 days of disability per case.

(b) Contact with radiations, caustics, and noxious substances—181 days per case.

(c) Cases in which workers were struck by moving objects—92 days per case.

(d) All falls—86 days per case.

(e) Cases in which workers struck against objects—80 days per case.

Taking into account the rankings of all three evaluations, it appears that the three general classes of accidents deserving preferential attention in the safety programs of the industry are:

(a) Cases in which employees are struck by moving objects. This class of accidents ranked first in volume of cases and in total economic loss, and third in average severity of the resulting injuries.

(b) Cases in which workers are caught in, under, or between objects. This group of accidents ranked first in terms of the average severity of the resulting injuries, second in respect to economic loss, and fifth in terms of volume.

(c) Falls—These accidents ranked third in volume of cases and total economic loss and fourth in average severity of the resulting injuries.

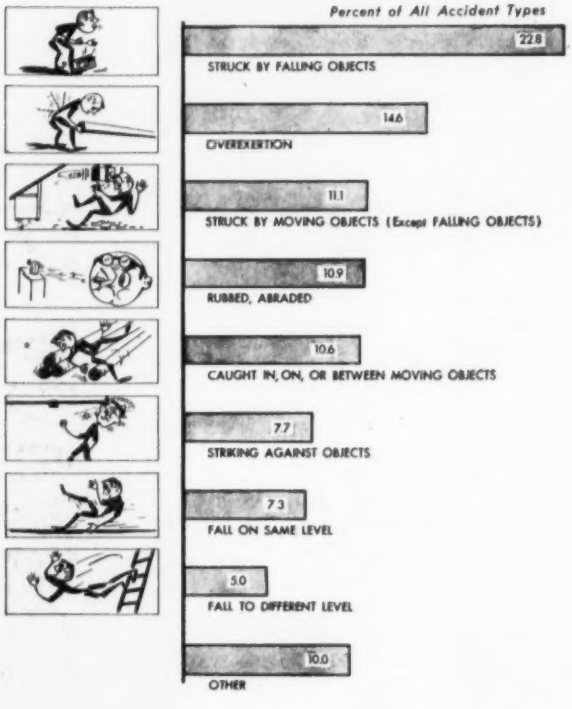
The emphasis placed upon these three classes of accidents in no way minimizes the need for efforts to prevent other types of accidents. It merely pinpoints the areas in which accident prevention can achieve the greatest measurable results. Some clues as to the particular problems to be overcome are apparent in the details of the accidents reported in these three classes.

(A) THE "STRUCK BY" CASES—These accidents were highly concentrated in three general activities—the movement of materials, the use of handtools, and the operation of machines. **In material movement operations,** the objects which struck the workers were most commonly the materials being handled—characteristically, they were

(Continued on page 30)

Chart 4. MAJOR TYPES OF ACCIDENTS

In the Boiler Shop-Products Industry



Edited by HENRY M. GROSMAN
Counselor at Law, Newark, N. J.

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. . . . . Newark, N. J.

TUBERCULOSIS—Failure of Employer to Warn Employee of Symptoms as Disclosed by X-Rays

An employee was denied compensation for the aggravation of tuberculosis allegedly caused by the employer's negligent failure to warn him of incipient symptoms disclosed by X-rays taken at the employer's plant hospital. The employee's claim was based upon a nonfeasance, the negligent failure to warn, not the tuberculosis, which concededly was not traceable to his position. It has never been held that nonfeasance may amount to an accidental injury which may be definitely located as to the time and the place where the accident occurred. The court held that unless tuberculosis arises out of the employment, it is not compensable under the compensation act. Affirmed.

Tourville v. United Aircraft Corporation; United States Court of Appeals, Second Circuit. No. 25162 January 6, 1959. Appeal from the United States District Court, District of Connecticut.

FALL WHILE TAKING SHOWER—Course of Employment—Personal Act

A volunteer fireman's claim for benefits was properly denied. He fell and was injured while taking a shower at a motel he was staying at, while attending a firemen's convention as a delegate. The court held that the board was correct in finding that at the time of the fall he was engaged in a purely personal act. Affirmed.

Seaman v. Hewlett Fire Department of Hewlett Bay Fire District; New York Supreme Ct., Appellate Div., Third Judicial Department. No. 1292. March 11, 1959.

LUNCH HOUR INJURY—Course of Employment

An employee was driving his superior to see various customers. The superior told the employee to go out and have lunch so that there would be more time to see other customers later on. The employee was injured in the restaurant. The court held the employee was within the scope of employment. Furthermore, since the actual circumstances of going to lunch were so closely regulated by the employer, the employment could be deemed to have been continued to the place of the accident. Affirmed.

Grosack v. Hermann and Jacobs Corp.; New York Supreme Court, Appellate Division, Third Judicial Dept. No. 1248. March 11, 1959.

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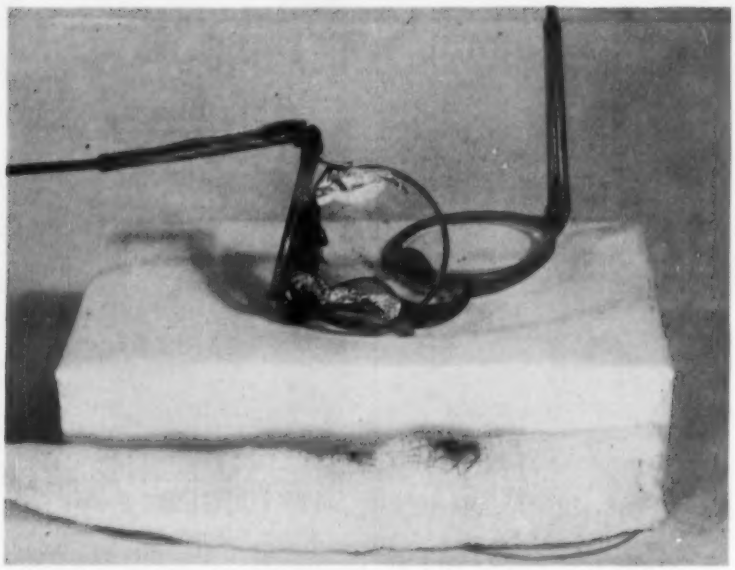
(Use Key # F-8 on Inquiry Card on page 1)

Another Accident Checked



Goggle and Sweat Band More Than Earned Their Cost

The wearer of these safety spectacles escaped with only a singed eyebrow when molten aluminum erupted during a furnace operation. The fortunate wearer was Paul Porter of the Fabricast Division of General Motors Corporation in Bedford, Indiana. This accident involving the splash of molten metal illustrates not only the value of safety eyewear, but also the importance of having safety goggles and spectacles whose frames are strong, non-flammable, and capable of retaining the safety lenses, in accordance with A.S.A. code and Federal Specification standards.

Below the safety spectacles can be seem the singed sweat-band which Mr. Porter was wearing across his forehead at the time of the accident and which undoubtedly prevented painful burns to the skin.

Picture by courtesy of the National Society For the Prevention of Blindness.

Spot Accidents
(from page 28)

dropped by the workers; they fell from the material handling equipment; or they fell from the positions in which they had been placed for storage or processing.

A predominant category of "struck by" accidents in **handtool operations** consisted of those in which the workers dropped their tools or struck themselves while using the tools. In a considerable number of cases, workers were struck by flying materials set in motion by handtools.

In machine operations, the objects which struck the workers were primarily either machine parts which became dislodged and fell, or metal stock items which fell from the equipment during positioning or processing.

From the record, it appears that efforts to eliminate "struck by" accidents in this industry could most profitably be concentrated on improving the methods of handling materials. The high volume of cases in which materials fell from the workers' hands suggests that perhaps more emphasis should be placed upon mechanization. The rather substantial number of accidents involving cranes, hoists, trucks, and other material movement equipment, however, indicates that mechanization alone may not be the answer, but that an awareness of safety practices on the part of both the employer and the employee also is essential.

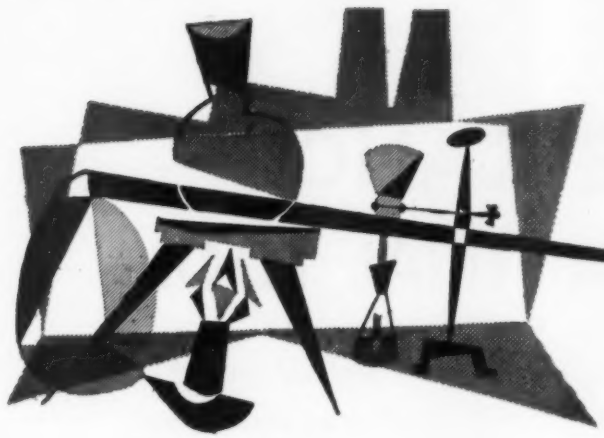
(B) THE "CAUGHT IN, ON, OR BETWEEN" CASES—These accidents were associated primarily with material handling and machine operations. The most typical accident was that in which a worker's hand or finger was crushed between a piece of metal stock and some stationary object as he tried to move the metal stock into a desired position. Less common, but productive of more serious injuries were the cases in which workers were crushed between swinging crane loads and stationary objects, or between moving vehicles and stationary objects. Cases of workers being caught by the moving parts of machines were not numerous, but a considerable number of employees were pinched by metal stock while feeding it into or removing it from a machine. Here again, the indications are that successful accident prevention lies in improved material handling procedures.

(C) THE "FALLS"—In about 60 percent of the falls, the injured person fell either to the surface on which he had been walking or standing or fell against some object. The bulk of these accidents were directly traceable to poor housekeeping or to inadequate work space.

The other 40 percent of the falls present more varied and complex prevention problems. These were the cases in which the injured fell from an elevation to a lower level. Their importance lies more in the severity of the resulting injuries than in their volume. Nearly a third of the falls from elevations were falls from ladders. Most of the other falls from elevations were falls from working positions on large fabrications. The need for stable and guarded working platforms for use in fabricating operations is strongly indicated by the record.

Chart by courtesy of Bureau of Labor Statistics, U. S. Dept. of Labor.

(To be continued in the July issue of "Safety Maintenance".)



industrial hygiene

New Limits for Radiation Exposure

The Atomic Energy Commission has approved the issuance for public comment of proposed regulatory amendments which would put into effect for Commission licensees the latest recommendations of the National Committee on Radiation Protection and Measurements concerning maximum permissible accumulated radiation exposures.

The regulation proposed to be amended is the Commission's basic regulation, issued in January 1957 and applicable to all AEC licensees, establishing standards for protection of licensees, their employees and the public against hazards arising out of the possession and use of radioactive materials. The present regulation was based on recommendations published by the NCRP in National Bureau of Standards Handbooks 52 and 59.

A principal effect of the proposed amendments, based on recommendations of the NCRP published in April 1958 in an Addendum to NBS Handbook 59, would be to limit the life-time accumulated radiation doses of workers in restricted areas, where radiation levels are monitored and controlled, to approximately one-third of limits permitted under the existing regulation. The revision would limit the total external radiation exposure any worker may accumulate beyond the age of 18 to an average of 5 rems per year and not more than 12 rems in any one year. Present limits are 15 rems per year, and without further restrictions as to accumulated dose.

A rem (roentgen equivalent man) is a radiation dose of any ionizing radiation estimated to produce a biological effect equivalent to that produced by one roentgen of X-rays.

Maximum permissible concentrations of radioactive substances in air and water would also be revised to take account of latest NCRP recommendations on internal dose being published in a new National Bureau of Standards Handbook 69. Among the changes is one relating to radioactive materials which have their principal effect on the whole body or gonads. In controlled areas, the maximum permissible concentrations of these materials would be reduced to approximately one-third of the concentration values previously specified for occupational exposures. For other radioisotopes, some values would be increased, some decreased, and others would remain essentially the same.

For individuals outside of controlled areas, and for all persons under 18 years of age, the maximum permissible radiation doses and concentrations in air and water would be one-tenth of the recommended permissible values for radiation workers.

The National Committee on Radiation Protection has pointed out that lower limits such as those proposed should not be interpreted as indicating that exposures at the levels previously permitted caused damage. As stated by the NCRP when the addendum to Handbook 59 was published in April 1958:

"The changes in the accumulated MPD (maximum permissible dose) are not the result of positive evidence of damage due to use of the earlier permissible dose levels, but rather are based on the desire to bring the MPD into accord with the trends of scientific opinion; it is recognized that there are still many uncertainties in the available data and information. Consideration has also been given to the probability of a large future increase in radiation uses."

Under a proposed new provision in Part 20, licensees would be required to furnish employees immediate reports of overexposures and periodic reports of their accumulated exposure to radiation. Licensees would continue to be subject to the requirements of the existing regulation that they report excessive exposures to the Commission.

Licensees would be required to preserve employee exposure records until December 1964 or until five years after termination of an individual's employment, whichever date is later. Changes in these requirements may be made later by the Commission.

Air Pollution Conference

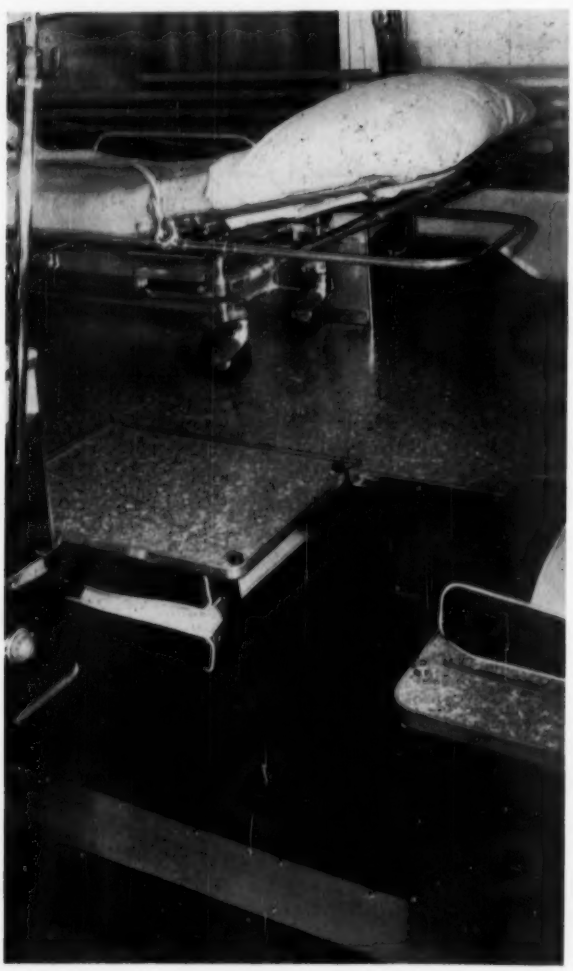
Research findings on air pollution topics ranging from automobile exhausts to atmospheric monitoring will be presented June 22 through 26 in Los Angeles at the 52nd annual meeting of the Air Pollution Control Association. S. Smith Griswold, air pollution control officer for Los Angeles County, has been appointed conference chairman for the meeting which

(Continued on page 45)

THE AMBULANCE — AS AN INDUSTRIAL TOOL

What is the role of the ambulance in your first-aid set-up?
What factors should be considered in selecting an ambulance?

Flashing red lights, the high whine or rumbling of a siren trailing off in the distance are frequent sights and sounds in this fast moving age of ours. They mean that speedy help is on the way—to alleviate pain, to rush victims of accident or illness to centers where they can receive the prompt, professional medical care that often makes the difference between fatal or permanent injury and complete recovery.



And the difference between the two is sometimes measured by the speed of the ambulance that answers the call, and the degree of efficiency and use of the equipment it contains.

While it is true that off-the-job injuries to workers occur more frequently, they are often less serious than on-the-job injuries. It is the latter which concerns us at the moment. Although modern safety devices, safety education and industrial safety programs have made wonderful progress in reducing the total, there were still more than two million disabling work injuries in the nation last year. It is this figure that brings the ambulance in industry into sharper focus as an industrial tool—one that has an important economic as well as humanitarian value for all concerned.

Disabling work injuries cost industry a huge sum each year, not only in lost production time of the worker himself, but also in medical care, compensation and the non-productive time of those who must attend to his injuries at the time of the accident.

The use of ambulances in industry is growing in more or less direct proportion to the size of individual industrial establishments, and the tendency toward the decentralization of manufacturing centers by many of our large corporations with multiple plants.

New plants, and many old plants which are relocating, are moving to suburban areas for obvious reasons. Land is cheaper and more available for today's modern in-line plant construction and for adequate employee parking facilities. However, this means that, even with our ever-improving safety programs and the many precautions against injury, the victims of severe industrial accidents are often miles away from necessary medical help and care. In such cases, the ambulance is the only safe, practical means of transporting the victim to established medical centers or hospitals where he can get the prompt important attention that is needed.

There are probably no national or authoritative figures on the relationship between size of industrial

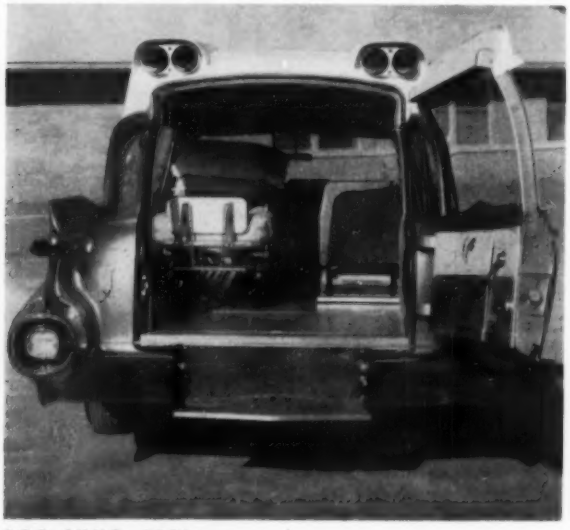
Note large step-well and fold-in-floor attendant seats. Two cots can go on floor with rear seat down, as shown.

This 54-inch headroom ambulance holds four patients, full emergency equipment as well as supplies for two attendants.

plants, or number of employees, and the need for an ambulance as a piece of standby equipment. However, there certainly exists some correlation between plant size, nature of the work, its distance from established medical facilities—and a point at which an ambulance becomes an industrial necessity—economic as well as humanitarian.

The need for permanent ambulance service, or a plant ambulance, becomes more definite when we consider industries or occupations which might be considered hazardous, and certain industry classifications which have a high accident frequency rate, or a high accident severity rate, or both.

According to National Safety Council statistics, the following industries have accident frequency rates and accident severity rates well above the average for all industry. Taking size and location and number of personnel into consideration, they might be considered prime prospects for company-owned ambulances. Such industries are: coal mining, quarries, lumbering, construction, mining other than coal, wood products, clay products, foundries, electric utilities and petroleum.



Cement and steel industries, on the other hand, have a low accident **frequency** rate, but when accidents do occur, they are likely to be severe. Organizations with several plants in one area, but with one central medical department or dispensary, can also use an ambulance to good advantage. Nearly 50 percent of all industrial accidents occur to the trunk, legs or feet of the victims, and an equally high percentage of that group requires safe, professional transportation in order to prevent aggravating the original injury.

Ambulance Requirements

The modern ambulance is a highly specialized vehicle, built from the ground up for the very important job it must do. It must be rugged and dependable. Emergencies won't wait on repairs. It is often driven at high speeds, and over terrain that would be punishing for ordinary passenger cars. A husky chassis and a solid, strong and well-designed body, therefore, are fundamental requirements.

The ambulance body interior is equally important. It must have adequate headroom and plenty of move-around room for the comfort of the patient and the convenience of attendants who may have to administer to his needs enroute. For example, cardiac patients should be moved in a semi-reclining position. Sufficient headroom is essential. It must de designed for efficiency. Medical supplies, respirators, oxygen equipment and other necessities must be at the attendant's fingertips. Every available inch of space is used for the storage of linens, blankets, extra cots and the many other items that every well-equipped ambulance should carry. It must be well heated in winter and ventilated in summer. Some have air-conditioning systems.

The well designed ambulance should have large, wide doors for safe loading and unloading of patients. For the same reason, it should be low enough to be loaded easily, without strain.

Of special interest to industrial concerns is the type

(Continued on page 45)

Large back door, low loading height are essential in well designed ambulance, for convenience and patient's comfort.

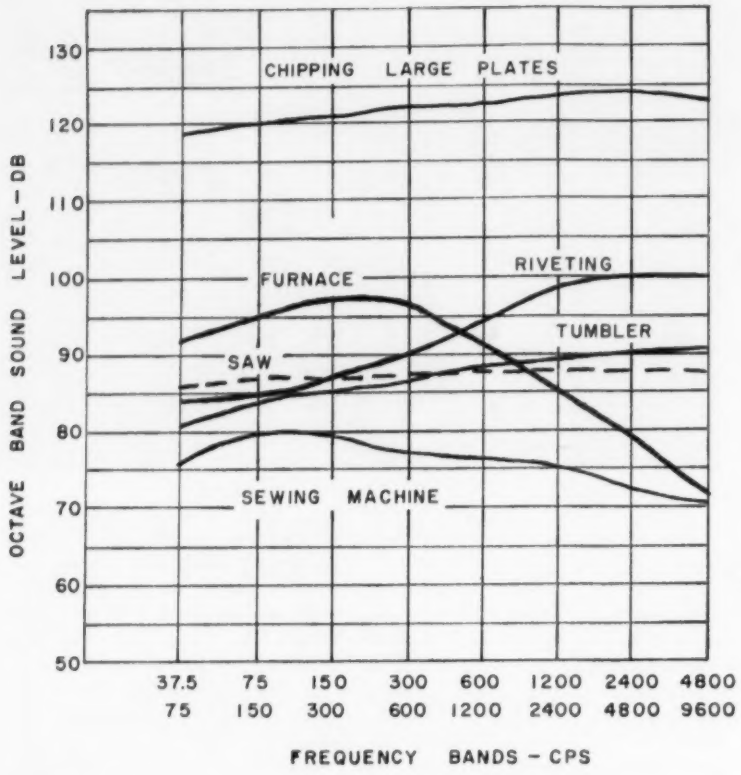
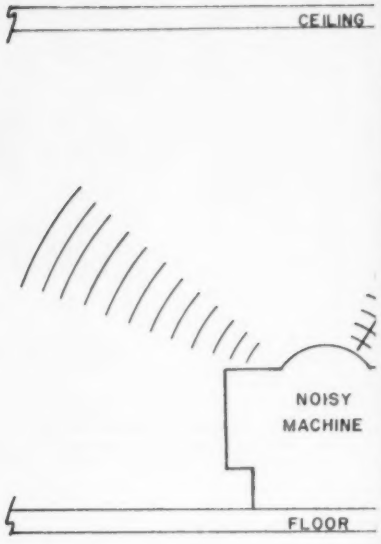


Figure 1

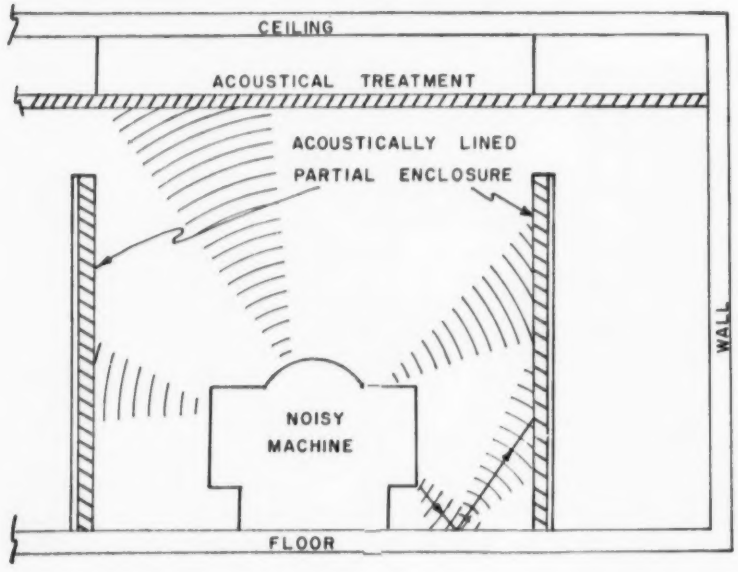
Octave band sound levels in decibels of some typical industrial noise sources



NOISE REDUCTION FOR A SMALL PLANT

Figure 4

How a partial exposure and an accoustically-lined ceiling can reduce noise without completely enclosing a machine



NOISE CONTROL SERIES
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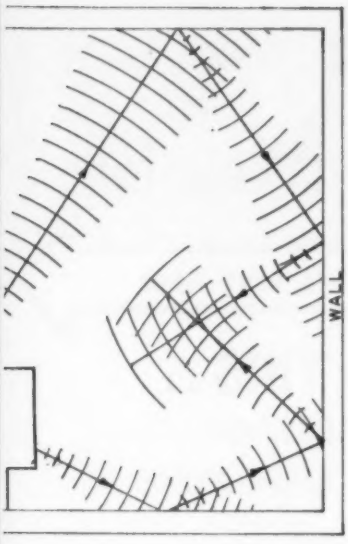

Figure 3

How sound waves are reflected in hard walled rooms

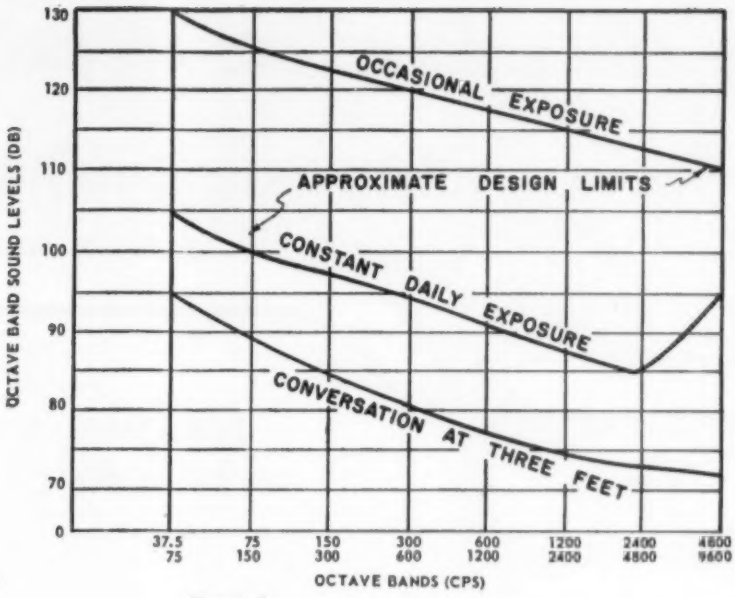

Figure 2

Design goals for industrial noise sources

The upper curves apply to hearing loss. The design goals for a given industrial plant should lie between the upper and middle curves, depending upon the extent of the exposure of the workers to the noise. *These data are tentative estimates and have no legal status.*

Why reduce noise?
How to measure and specify noise
How to reduce noise

Noise is becoming a more and more important problem in man's environment. With the constant increase of industrial noise due to high-speed machinery associated with mass production, man is subjected to an ever-increasing din during his waking hours, and in many cases the privacy of his sleep also is invaded. It is increasingly important, therefore, to reduce noise in the offices and shops in which he spends a great part of his day.

Progressive managers have learned that cleanliness, good lighting, and air-conditioning result in better employee morale, greater efficiency, and improved employee relations. Noise control is taking its rightful place among these factors because of its contribution to safety and improved working conditions.

High industrial noise levels can cause permanent damage to hearing. As a result, in some states workmen's compensation laws have been liberalized to allow generous payments to workers whose hearing has been damaged by industrial noises. This action has stimulated activity in industrial noise control. Many companies now test employees' hearing periodically to determine whether any impairment is being caused by high noise levels in their plants. Noise levels which are not quite high enough to inflict permanent hearing damage can cause temporary hearing loss, fatigue, and general discomfort. Although there have been no well controlled scientific studies of the effects of noise on workers' efficiency, it is generally accepted that excessive noise can result in loss of efficiency and reduced quality of workmanship due to fatigue and low morale.

The shop owner who takes steps to reduce noise levels in his plant and to bring about other improvements in environmental conditions often has access to the cream of the labor market. Also, he usually has less personnel turnover than a shop from which employees go home at night suffering from temporary hearing loss or fatigue due to high noise exposure.

Another objection to noise is its effect on communications. Misunderstanding of verbal instructions in the interchange of information necessary in the operation of a plant can cause very costly errors. Employees who must converse in the presence of high noise levels may hear incorrectly because of fatigue, temporary loss of hearing, or the masking effect of the noise. Further, people get tired of having to talk very loudly or shout in noisy surroundings, and either assume that the other fellow heard correctly, or get to the point where they no longer care.

Noise also is a safety hazard, since it may prevent people from hearing warning signals, such as shouts or horns, when there is danger from a vehicle or a falling object. Noise from the loudest machine or operation in a room may mask out the sounds heard

(Continued on page 41)

by **JAMES E. ANGELL**
Project Engineer
Howard C. Hardy & Associates
Chicago, Illinois

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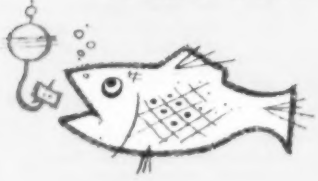
If he chances it, eventually he'll get hooked.

Safety is as simple as that. When you take chances and short cut safety on the job, there's an accident waiting on the other end of the line. You may not get hooked this time, but sooner or later your luck will run out.

The bait of taking a chance may look tempting. Remember that in safety what you don't do is just as important as what you should do:

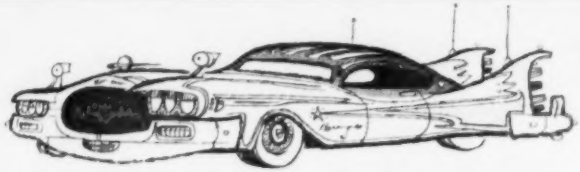
TEMPTED TO CHANCE IT?



Do follow safety rules — use your protective equipment — after all, it's you we want to protect!

Don't take chances and get pulled in by accident.

As we see it: Only suckers bite on accident bait.



MECHANICAL MONSTERS

Just take a look at the highways and all the mayhem that mechanical monsters cause!

Now take a second look at machines you may encounter on and off the job!

Always wait for machine or powe tool to come to a stop before you ad or repair it.

Don't let a mach take a bite out of y Keep your eyes your job. Avoid we ing loose or rag clothes, neckties, jewelry that mi become entangle moving parts.

SUDS 'N' DUDS —Don Dirty dips into dermatitis.

Hey Don, how about using a little of this stuff!
AW! plain water's good enough!
NO it isn't, Don!
LOOK, clean as a whistle!
Don, your hands just LOOK
you need skin cleaners to get irritants off, STOP DERMATITIS.
LATER

FOR THE MISSUS by Margo Fulton

NO MIXER MIX-UP: Are you one of those homemakers who keeps her electric mixer plugged into the outlet all the time? If so, you're not the only one, for a survey showed that this is a common practice. But you're in unsafe company! Accidentally brushing against the starter switch could set the mixer going, or a child might turn it on. Remember, so long as it is plugged in, you have a live wire! Always put the beaters in place before you plug in. When not in use, disconnect the plug . . . be safe.

WAXING TIP: If you prefer to use a paste type wax on furniture or floors, here's a tip for spreading the wax evenly. Put a lump of the wax in the center of several layers of cheesecloth. Then pick up the four corners of the cheesecloth to form a little bag or pad of wax. And wax away!

LEFTOVERS: Here's a different twist for leftover veal, beef or other meat. Dip slices of the meat in catsup, roll in breadcrumbs, and fry.

To entertain some pe you have to do is listen.

"They all want me t wives they're allergic they can get out of spr ing!"

"A lesson like that should teach a fellow. That's his ninth lesson!"

ACCIDENT ODDITIES

THE IRONY OF IT! A man stepped on a nail sticking out of a board. Fortunately, the nail didn't puncture his foot, but as a safety precaution, he removed the nail from the board so other people would not step on it. But as he pulled it out, the nail flew up and broke his front tooth. The moral of this little episode is not that you shouldn't remove nails from boards, but that you should know how to do it safely.

There's one thing about not planting tomatoes: If it's a good year, your neighbor will give you some from his surplus; and if it's a bad year, you wouldn't have any anyway.

First Sailor: "I know a place where women marines don't wear anything but their dog tags."

Second Sailor: "Hey, where's that?"

First Sailor: "Around their necks."

Mr. A: "Have you forgotten that you owe me five bucks?"

Mr. B: "No, but give me time and I will."

SOME TIPS FOR THE ROAD

Your Rights to Rites

You may be in the right and the other guy all wrong; but insisting on your "rights" in driving may lead to death and serious injuries for you and others.

Being "right" according to law isn't enough. To be really right, you have to be right with safety. For example:

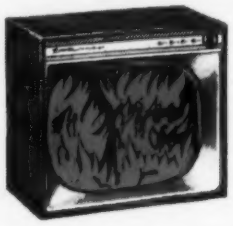
When a reckless passer tries to squeeze in ahead of you, ease up to give him room. Otherwise, it could be your final rites as well as his.

In bad weather those maximum speed limits are much too high. And remember too that roads are more slippery when a drizzle first starts than after a drenching rain has washed away the oil slick.

If another vehicle comes charging through a stop sign or a yellow caution light, let him go on his reckless way.

Above all, don't let the careless and thoughtless driving of others get your goat. Just because there are a lot of fools behind wheels is no reason why you have to be one too.

Remember, courtesy is contagious!



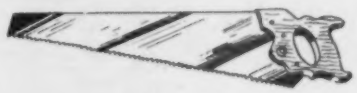
Too Hot a TV Program?

Fires may break out in a TV set because of improper repairs, improper installation or inadequate ventilation of the set. Generally there's more smoke than flame; but a smoldering TV set has two additional hazards: 1. High voltage current, and 2. Possible "implosion" (a bursting inward, such as with an electric light bulb) of the picture tube.

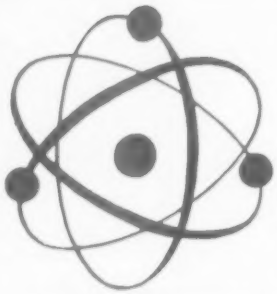
If a fire does occur in a TV set, the National Board of Fire Underwriters advises:

1. Disconnect the set by pulling the plug from the electric outlet.
2. Do not touch any metal part of the set — you may be electrocuted.
3. Avoid standing directly in front or behind the set—because of the implosion hazard.
4. The electricity will not be fully drained from the set, even when disconnected — so don't use water to put out the fire. Use only extinguishers approved for electrical fires: carbon dioxide or dry chemical. Carbon tetrachloride may be used but only in a well ventilated room. Be sure no metal part of the extinguisher touches any metal part in the set.
5. Cover the set with a rug, heavy blanket, or other covering to help smother the fire and contain the glass if an implosion occurs.
6. Take the covered set out of doors, carrying it from the sides.

Handsaw Safety Tip



When you *start* a cut with a handsaw, guide the saw with the thumb of your free hand, high up from the saw's teeth. If the saw buckles or jumps (generally due to forcing the saw), you are less likely to be cut than if your thumb were lying flat on the board.



Everyone Should Watch Out For "Radiation" Hazards

One of the problems of the atomic age is how to dispose of radioactive wastes so they won't endanger human life. But "hot" waste disposal emphasizes an old problem: Rubbish, garbage, dirty clothes, and spitting "radiate" disease.

That is why it is so important for all of us to help in keeping washrooms, lunch areas, and our own workplaces clean.

Put all refuse in waste cans instead of letting it lie around.

Help keep washrooms sanitary.

Clean work clothes make you feel better, look better and work better.

Most people wouldn't spit in their own living rooms . . . remember that you're "living" a big part of your life where you work.

#559

Noise Reduction
(from page 34)

by operators of other machines. As a result, an operator may fail to note that his machine is not operating properly or has been damaged, and possibly may suffer personal injury.

How To Measure and Specify Noise

Noise has many physical characteristics, but the two most important are intensity and frequency. Intensity effects are measured with an instrument called a sound level meter. This is a device having a microphone, a calibrated amplifier, and an indicating instrument. It measures sound pressure levels, commonly known simply as sound levels, in decibels.

Frequency is the number of vibrations or cycles per second occurring in a sound wave. It determines the pitch of a sound. Since the human ear does not respond equally to the same sound level at various pitches, it is not possible to describe adequately a complicated noise—for instance that made by a machine—by a single number such as the reading of a sound level meter.

In order to evaluate the approximate loudness of a noise, it is necessary to analyze it with respect to frequency. Since most industrial noises are broadband in nature, that is, they contain very many uniformly distributed frequencies, they are usually analyzed in bands of frequency in which the upper frequency of the band is twice the lower frequency. These are known as octave frequency bands. An instrument known as an octave band analyzer is used in conjunction with the sound level meter for this type of analysis.

The sound levels in decibels (abbreviated db) obtained for the different octave frequency bands may be plotted on a graph such as that shown in Fig. 1, in which data are given for various noises made by individual equipment and operations. The noise levels shown in Fig. 1 are typical average values taken from a survey by Karplus and Bonvallet.[1] The average noise levels for grinders, lathes, and milling machines are similar to those shown for the saw, falling between 80 and 90 db in most of the frequency bands.

In the type of graph shown in Fig. 1, the low frequencies (37.5 to 300 cycles per second) correspond to hums, thuds, and rumbles; the middle frequencies (300–2400 cps) to roars and clangs; and the higher frequencies (2400–9600 cps) to hisses or clicks. The human ear is much more sensitive to high frequencies than low frequencies. At the same sound pressure level, high frequency sounds are much louder, more annoying, more likely to cause hearing impairment, and interfere more with speech communication than low frequency sounds. Fortunately, they are also easier to reduce.

How much is too much?—There is no legal standard for the limits of environmental noise to assume prevention of hearing loss. However, numorous investigators have been studying the problem for industry and the military services. One investigation in this field was done by Dr. Howard C. Hardy [2] several years ago. A graph, based on his investigation, showing the maximum octave band sound spectra recommended for

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different conditions of exposure is given in Fig. 2. These are Dr. Hardy's recommended design goals for the maximum noise spectra to be allowed in industrial plants. However, these curves are still quite controversial. Figure 2 also shows a curve for the octave band spectrum which interferes with speech communications. **It should be pointed out here quite strongly that the curves given in Figure 2 are only the educated opinions of some experienced workers in the field and therefore do not represent a legal standard or basis for compensation, since the clinical data assembled to date may not be sufficient to allow preparation of fairly exact damage risk criteria.**

It is the belief that occasional exposures to levels below the uppermost curve are not likely to cause permanent hearing loss, while constant exposure—covering many hours per day over a period of a good many years—to sound levels above the middle curve is likely to produce a loss. Susceptibility to hearing loss due to noise exposure varies among people, and the possibility of loss is highly dependent upon the amount of exposure and whether there is a steady (surrounding) noise or intermittent noises. It is believed possible, to a certain degree, to sort out workers of varying susceptibility by hearing tests and place those most susceptible to noise in jobs with suitably low noise levels.

In order to carry on a conversation at a distance of three feet, the octave band noise levels should not exceed those given in the lower curve of Fig. 2. To be able to communicate verbally in noise which exceeds the constant daily exposure curve, people must shout into each other's ears. It is evident, then, that noise levels can be roughly estimated from the ability to converse in a given noise and that this simple test gives a fair prediction of whether or not the environment is safe for long-time exposure.

Noise Reduction Methods

Machines make noise because vibrational forces generated inside them by lost motion, imbalance, friction or other causes are transmitted through the machine structure to larger areas on the outside surfaces, such as sheet metal covers. These surfaces are set into vibration and are very efficient in radiating sound waves into the air. The forces of vibration may also be transmitted through the mountings of the machines into floors, benches, or other surfaces having large noise radiating areas. Machines mounted on upper floors of buildings, for example, may cause ceilings to radiate noise into the floors below. In such cases, effective noise reduction can frequently be achieved by inserting vibration isolation mountings under the machine. Such corrective measures, incidentally, also will reduce vibrations transmitted to areas where critical and accurate work must be done, and may prevent personnel fatigue and cracking of walls and other parts of the building structure.

Proper layout and distribution of machines and noisy operations, the use of acoustical absorbing materials, and noise-attenuating enclosures and partitions will do much to assure a minimum number of shop personnel being exposed to excessive noise levels. This is especially true in new plant design. Plant engineers and acoustical engineers often cooperate in the layout of a plant so that it is productively efficient and also has a pleasant acoustical environment. Machines can be chosen to fit noise as well as production criteria in both new or existing plants.

Acoustical Treatments

Acoustical absorbing materials on walls and ceilings provide very effective noise reduction in shops. The noise of a machine located outdoors would drop off fairly rapidly. However, indoors, in a room with hard surfaced walls, floors, and ceilings the sound waves strike these hard surfaces and are reflected back and forth, causing an effect known as reverberation or multiple echoes, as shown diagrammatically in Fig. 3. This reverberation causes the noise level to be practically constant throughout the entire room, although it is somewhat higher in the immediate vicinity of the source. The noise level of the reverberant sound depends upon the amount of acoustical absorption in the room. The acoustical absorption of any surface or material is rated by an absorption coefficient, which is the percentage of the total sound energy absorbed. The absorption is given in units called sabins, which are square foot units of perfect absorption.

Acoustical treatment of a space may lower the reverberant noise level as much as 12 db. If a shop has a low ceiling and a large number of machines and items of equipment and stock distributed throughout the space to scatter the sound waves, acoustical treatment can cause the noise to fall off with distance at an even greater rate than out-of-doors. Therefore, high sound levels caused by one or two machines in a large room need not cause excessive noise throughout the room.

Acoustical treatment also enables one more easily to locate the source of the sound that is reverberating. In a reverberant space the noise appears to be a jumble coming from all directions, which creates a psychologically unpleasant effect. People sometimes do not mind the noise of their own machines; it is the reverberant level of all the other noises which annoys them. Effects like these, however, cannot be easily measured by instruments.

Many of the people in a shop are moving around from time to time. Therefore, if the room is highly reverberant, acoustical treatment gives them a rest from continual high noise levels to which they might otherwise be exposed in aisles or areas remote from the noisiest operations.

Many noises in shops are of the impact type, such as those of punch presses, hammering, and riveting. Acoustical treatment can be very beneficial here, since it reduces the loudness of the noise by reducing the reverberation of these impacts. Due to the acoustical absorbing treatment the sound of the impact does not build up so intensely and dies out much more rapidly. This reduction can be as great as 15 db or more in some cases. The resulting sound is less damaging to hearing and allows better communications, since parts of conversation and desired warning signals get through between the impacts.

It is estimated that ninety percent of all production areas would be significantly improved by acoustical

treatment. A very good way to demonstrate this is to treat at first only one-half of a large area, and then notice the difference in the reverberant noise in the treated and untreated areas.

Wall and Ceiling Treatments—Many acoustical materials can be cemented or nailed to walls and ceilings to absorb sound and reduce reverberant effects. These materials are usually thin and come in one- or two-square foot units. Being thin, they do not absorb low frequency sounds well, but may be used effectively if the problem is high frequency and impact noise. They are most easily installed in areas where the walls and ceilings are not cluttered with pipes, lights, and sprinkler systems.

In new plants, more economical ceiling materials may be used. Concrete or gypsum roofs may be poured on top of acoustical form board which remains to form an acoustical ceiling. Prefabricated concrete block and metal roofdecks may be supplied with acoustical surfaces. The metal roofdeck can be made up with a perforated ceiling surface, behind which is installed glassfiber insulation.

Suspended Treatments—If the plant is built and in use, pipes, lighting systems and other equipment in the ceiling area, plus the necessity of production shutdown while making installation, make surface treatment impractical. However, there are many types of suspended acoustical ceilings and treatments which may be hung at night or over weekends with a minimum of scaffolding and labor. One is composed of an acoustical blanket laid on top of corrugated and perforated aluminum sheets which are supported over large spans. This installation has low initial cost and maintenance and gives easy access to the equipment between it and the ceiling. Such acoustical treatment with a large air space behind it is also quite efficient at low frequencies.

Space absorbers, sometimes called "functional" absorbers, are another type of suspended acoustical treatment for industrial use. These sound absorbing units are of various shapes and usually are hung by wires near the ceiling. Several sizes and shapes, such as panels, cones, and polyhedrons are now available. Sometimes these are hollow units with surfaces made of acoustical absorbing materials, and, since they present more than one side to the sound field, are often more efficient than surface treatments. The important factor in these absorbers is the number of absorption units each has. The total absorption will depend somewhat upon distribution of the absorbers, since they may be less efficient when placed close together. Space absorbers are readily installed during non-work periods and are quite often strung on horizontal wires. They should always be high enough and in such positions as not to cast objectionable shadows, and should be restrained from oscillating in drafts.

Enclosures

One of the most effective ways of reducing the noise of a machine or operation is to enclose it fully or partially so that the noise does not get out into the surrounding areas. There can be many variations of this technique depending on the requirements of the situation. In many cases a machine or particular op-

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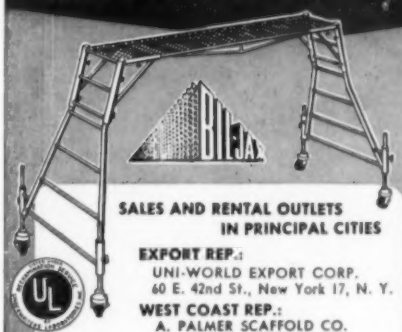

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(For details, use Key # F-12 on card on page 1)

eration may make such a tremendous amount of noise that it must be located in a completely enclosed room away from all other operations. The room must have very substantial wall construction and all doors and other openings must be sealed tightly to prevent the noise leaking into other spaces. Acoustical absorbing treatments on the walls and ceilings inside such rooms will help considerably by reducing the reverberant noise levels in them, thus reducing the amount of noise which is available to be transmitted through the walls to adjoining spaces.

With this type of noise reduction treatment, only a minimum number of people need be exposed to the noise; those who work in the room with the machine, and those who are required to go in occasionally. Personnel working continually in such high noise levels can wear ear protection devices, and others can put them on before they enter.

Construction of these rooms will vary, depending upon the intensity and frequency of the noise to be reduced. Walls are rated according to their sound transmission loss, that is, their ability to reduce the transmission of sound from one room to another. This transmission loss factor increases with frequency, i.e., the higher the noise frequency the easier it is to reduce the transmission of noise. If it is necessary to isolate the low frequency noise of a machine by as much as 30 db, masonry construction may be required. If it is necessary to reduce high frequency noise by 30 to 40 db, plasterboard on studs, or prefabricated steel partitions might be used. The sound transmission loss of masonry construction may vary from 30 to 40 db at the low frequencies to 50 to 60 db at the high frequencies, while that of lighter constructions may be 10 to 20 db at low frequencies and 30 to 40 db at the high frequencies.

Small Total Enclosures—Machines which run continuously without the necessity of an operator, such as compressors, pumps, or automatic production machinery processing items from a conveyor system or hopper, can usually be quieted effectively by small total enclosures built over them. These enclosures should be made just large enough to go around the machine, with some room for clearance. The wall construction of such enclosures will depend upon the amount of noise reduction required. A construction which is quite often used consists of prefabricated panels made of two layers of sheet metal with acoustical absorbing and damping materials compressed between them. The inside panel is perforated to allow the noise of the machine to be absorbed in the acoustical material. Access doors or removable panels are usually required for maintenance or adjustments. Ducts or tunnels lined with acoustical materials may be required for ventilation or other openings, such as for conveyors for parts being processed. All openings around pipes, electrical conduits or other connections must be sealed to prevent sound leaking out.

Partial Enclosures—Many types of machines and processes have connections with the rest of the plant and require access at several points, thus making total enclosures impractical. Also, in many cases, more noise is radiated in some directions than in others. Many machines are directional noise sources, especially at the high frequencies. Low frequency sounds tend to spread out in all directions, while high frequency sounds tend to travel in straight beams in the directions in which they are radiated, especially if there are acoustical absorbing treatments to prevent reflections.

It is possible, therefore, to achieve noise reduction in many instances with partial enclosures. These may take many forms. The simplest would be a barrier wall section placed next to the noisy side of a machine to block the sound from being radiated to a group of employees working in that direction. Sometimes two such walls are used, parallel to one another, with the machine between them, forming a sort of roofless tunnel. Walls in this arrangement are usually more effective when lined with acoustical absorbing material on the sides toward the machine, to absorb the noise rather than reflect it back into the room. Noisy machines are sometimes placed at the center of a tunnel-like structure with a roof, all inside surfaces being acoustically lined. Access to the machine is gained through the ends of the tunnel. Illumination is, of course, needed here. This type of configuration has also been used to isolate the general noise of a shop from the location where products, such as appliances, are inspected for the amount of noise they make.

Often a partial enclosure in the form of a cover mounted over a noisy section of a machine is beneficial. This cover should be completely sealed at the edges, and structural vibration isolated from the machine to prevent it from vibrating and reradiating noise. These covers are usually lined internally with acoustical absorbing material.

As shown in Fig. 4, a partial enclosure in which there are walls surrounding a noisy machine but the top is left open works out well in plants where the ceiling is cluttered with pipes, beams, lighting fixtures, and other equipment. If the inside walls are lined with acoustical material, much of the noise of the machine is absorbed, as the figure shows. In cases of this type, as well as for most other partial enclosures, acoustical treatment of the ceiling with surface or suspended material will be very helpful, since the noise which reaches up to the top of the walls will be absorbed in the ceiling treatment instead of being reflected from the high ceiling into the surrounding areas. Even if the entire ceiling is not treated, it is very beneficial to treat the area just above and somewhat beyond the partial enclosure.

It is possible with partial enclosures to achieve from 6 to 20 db of noise reduction. This depends upon the kind of enclosure possible due to problems of access, location of the noise sources, and other factors.

Case Histories

The equipment in a large reverberant room of approximately 40,000 sq. ft. of floor space included a large cold header, which is a machine for putting the heads on large bolts. A partial enclosure was planned around the working end of this machine after treating the room with space absorbers. However, the acoustical treatment brought about such a remarkable reduction in the reverberant noise that the partial enclosure was deemed unnecessary.

In another plant, parts falling into steel hoppers were creating a noise level of 105 db. After lining the

hoppers with rubber, the noise level in this area dropped to 90 db. It was also found that in addition to the noise reduction, the hoppers lasted longer because the falling parts caused less wear on the rubber than on the steel.

In a study of the mechanical action of the press in a printing plant, it was found that the folding and cutting end of the machine created the most noise in relation to the personnel around it. A partial enclosure was designed to reduce the open area of the end of the machine as much as possible. A mock-up made of plywood and lined with glassfiber material reduced the noise so satisfactorily that a permanent sheet metal enclosure was made. This enclosure and space absorbers in the area reduced the noise level 10 db for both the workers in the general area and those close to the end of the press.

In a screw machine plant, the installation of space absorbers reduced the noise level in the aisles and other areas remote from the machines from 100 to 90 db.

1 Henry B. Karplus and George L. Bonvallet, "A Noise Survey of Manufacturing Industries," Amer. Ind. Hygiene Assn., Quarterly, 14.4, Dec. 1953.
2 Howard C. Hardy, "Tentative Estimate of a Hearing Damage Risk Criterion for Steady-State Noise," J. Acoust. Soc. Am., Vol. 24, No. 6, Nov. 1952.

Material by courtesy of the Small Business Administration.

Ambulance As Industrial Tool
(from page 33)

of ambulance that has a capacity of four patients and ample work space for attendants. They are particularly suited for use by plants and industries which occasionally experience accidents involving more than one victim. In this group might be included such plants or industries which have a high accident severity rate, such as coal mining, quarries or large construction projects.

The ambulance is an industrial tool. It is a highly specialized vehicle, and it might be said that it is used infrequently, when compared with other methods of transportation. However, when it is used and is needed, its first cost becomes insignificant when compared to the dollars and cents chain reaction set off by the accident itself.

Pictures by courtesy of Superior Coach Corporation.

Sanitation and Health

One of the highlights of the annual convention of the Association of American Soap & Glycerine Producers, Inc. in New York City, was a panel discussion by J. Lloyd Barron and Albert J. Burner on the topic "Advances in Sanitation Related to Health." Mr. Barron is Manager of the Engineering and Sanitation Department, National Biscuit Company, New York, N. Y. Mr. Burner is Supervisor of Cleaning Standards, Port of New York Authority. Presiding at the meeting was F. B. Patton, Vice President, Armour & Company.

Messrs. Barron and Burner are co-authors of the booklet "Building & Equipment Sanitation Maintenance," published by the Soap Association. In their share of the convention meeting they discussed many aspects of the present standing and growth of the sanitation profession, and spoke also of the philosophy and functions of the newly formed professional organization in the field, the Institute of Sanitation Management.

Typical of the issues dealt with during the session were: definition of the term "industrial sanitation;" evaluation of current standards for determining sanitation costs; carry-over value of industrial sanitation into the home; new developments in sanitation practices—including details on a new airport degreasing operation recently developed by the Port of New York Authority; and other similar topics.

The complete text of the questions and answers is offered free of charge by the Soap Association on request to its offices at 295 Madison Avenue, New York 17, N. Y.

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Air Pollution Conference
(from page 31)

will bring together an anticipated 1,000 experts in this field from all parts of the United States, Canada and Mexico.

Approximately 75 technical papers will be presented during the conference's 15 sessions. Among the titles of sessions scheduled are "Flue Fed Incinerators," "Organic Solvents," "Combustion of Fuels," "Radiological Aspects of Air Pollution," "Simple Techniques Used in Solving Everyday Air Pollution Problems," "Health Aspects of Air Pollution," "Zoning from an Air Pollution Point of View," "Automobile Exhausts" and "Atmospheric Monitoring."

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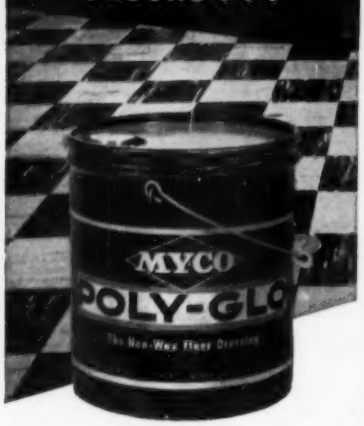

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SM-69

(Use Key # F-14 on Inquiry Card on page 1)

AFL-CIO Safety Conclusions

AFL-CIO President George Meany announced that delegates from more than fifty international unions, ending a two and one-half day conference on Safety and Occupational Health held in national headquarters, concluded that cooperation between labor and management would provide America with a far better pathway to safety than progress through tragedy.

A prime purpose of the Conferernce was to coordinate the efforts of all AFL-CIO affiliates in their common goal of achieving safety on and off the job through labor-management relations, education and legislation.

In the field of labor-management relations the conferees concluded that safety and occupational health was not an area of controversy and that both management and labor share the mutual responsibility of achieving common goals. To this end, the conference urged prompt establishment of joint labor-management safety committees wherever trade unions were the recognized collective bargaining agent since such committees had demonstrated their value to both management and labor.

In the area of education and training, the conferees urged all AFL-CIO affiliates to increase their efforts to acquaint their members more fully with the nature, purpose and methods of achieving safety. To this end, safety training was recommended as an integral part of apprenticeship training, general trade union educational programs and in leadership training programs. Moreover, stress was placed upon the duty of trade unionists to join with all other groups in their communities to achieve safety on the highways and in the homes.

Concerning legislation, the conferees asserted that in order to benefit all workers proper minimum standards for safety should be enacted with emphasis being placed upon corrective measures rather than upon punitive actions wherever possible. The fact was recognized that while legislation is not to be utilized to shift responsibilities of labor and management to government, nevertheless sheer decency required establishment by law of some protection for all citizens.

At the conclusion of the Conference, Richard F. Walsh, a Vice-President of the AFL-CIO and Chairman of the Standing Committee on Safety and Occupational Health, under whose direction the conference was held, announced that prompt steps would be taken to transmit the results of this conference to all affiliates of the AFL-CIO.

"Something tells me this is going to be a lousy territory."

Sunglasses For Safety

The wearing of sunglasses is important! Studies by the Travelers Insurance Company show that driver error caused 85 percent of the highway accidents in 1958, and motor vehicle accidents caused 36,700 deaths and injured 2,825,000 more on the United States highways and streets. "Excessive glare," said Mr. Thomas Johnson, president of Sunglass Institute, "can eat up an essential substance in the retina —visual purple—more quickly than the body can replace it, thereby greatly reducing the sharpness of the vision." These important facts were uncovered by the Army-Navy Vision Committee. This authoritative body called these conditions "glare fatigue" and recommended the use of sunglasses to counteract it. Glare blindness can reduce ability to distinguish obstructions by as much as 25 percent.

Fire Safety Tip: Use Your Nose!

The schnozzola is still man's best detector, and the first tour of duty the best time to use it, says security contractor in citing the 11 top fire hazards.

The old schnozzola is still one of the very best fire detectors. And proper use of it on a security guard's first round of duty—by far his most important tour—can eliminate more than 90 percent of the causes of after-hours industrial plant and commercial fires.

These are two basic admonitions accompanying a listing of the eleven principal fire hazards by Pinkerton's National Detective Agency, which operates security installations for over a thousand industrial plants and businesses.

Smoke has distinctively characteristic odors, notes Pinkerton in urging security guards to use their noses as guides. With training, you can instantly tell whether that whiff of smoke is burning wood, paper or rubber insulation, for example. This knowledge should speed the guard to the location of the smoke even before automatic detection devices sound the alarm.

You can fully appreciate the value of an alert olfactory when you recall the fireman's rule of thumb that the "first five minutes at a fire are worth the next five hours."

Careful observation by the guard on his first tour of duty sets the stage for most efficient use of the olfactory. Characteristic odors of plant, materials and processes should always be carefully noted so that any foreign smells can later be instantly singled out. And, of course, the first round is also the time to spot the burning cigarette left carelessly behind, the blocked fire extinguisher, obstructed aisle or other hazardous conditions left behind from the previous shift.

On the leading fire hazards to be met in industrial plants Pinkerton lists from experience, though not necessarily in order:

- **Smoking**—and tossing of lit butts.
- **Matches**—especially lighted ones near flammables.
- **Electric wiring**—look for frayed cords, unauthorized appliances, wires hanging from nails or hooks.
- **Flammable liquids**—particularly the heavier-than-air ones, such as benzene, naphtha and gasoline, that can flow from an open container across the floor to an open flame and then flashback.
- **Loose rags**—also packing materials, which should be kept in covered metal containers.
- **Open flames**—extinguish all flames when not in use, though keep pilot lights burning.
- **Static electricity**—rigid plant regulations are needed to protect against static sparks in susceptible areas; fuel lines, for example, should be grounded before pumping flammable liquids.
- **Unattended machinery**—a possible source of fire from overheating.
- **Improperly stored paints and oils**—these liquids should be kept in raised drums fitted with hand-operated pumps (**not** with gravity faucets.) And the storeroom should be fitted with explosion-proof wiring and light globes.

Among hazards contributing to the **spread** of fire rather than to its start, Pinkerton lists these two:

- **Obstructed stairways and shafts**—they should be kept clear and should be enclosed with fire-resistant partitions equipped with self-closing, fire-retardant doors. These doors should never be blocked.
- **Blocked aisles**—like stairways, they should be kept clear for ready exit.

Quarterly Losses Rise

Estimated fire losses in the United States during March amounted to $99,610,000, the National Board of Fire Underwriters has reported. This loss represents a decrease of 3 percent from losses of $102,722,000 reported for March 1958, and an increase of 1.5 percent over losses of $98,120,000 for last February.

Losses for the first three months of 1959 now total $310,713,000, an increase of 1.4 percent from the first three months of 1958, when they amounted to $306,493,000. These estimated losses include an allowance for uninsured and unreported losses.

Welding, Cutting Safety Measures

Rules aimed to increase safety in the use of welding and cutting operations at public exhibitions and demonstrations were adopted by the National Fire Protection Association at its 62nd annual meeting.

Published in the NFPA Standard for the Installation and Operation of Gas Systems for Welding and Cutting (NFPA No. 51), the rules require that the fire department shall be notified of the use of welding and cutting tools employing compressed gases at public demonstrations so that the safety of the demonstration site can be checked. The rules also assist fire departments in evaluating the factors to be considered and call for the provision of a portable fire extinguisher of the dry chemical or carbon dioxide type plus a pail of water at each demonstration booth.

Copies of the pamphlet, Standard for the Installation and Operation of Gas Systems for Welding and Cutting (NFPA No. 51, 32 pages, 50 cents) are available from the National Fire Protection Association, 60 Batterymarch St., Boston 10, Mass.

Inspect Your

by **SPENCER T. STACK**

Superintendent of Inspection Dept.
New York Fire Insurance Rating
Organization, New York, N. Y.

TABLE 1: FIRE SAFEGUARDS FOR PAINT SPRAYING

Spraying operations should be properly segregated, well ventilated and confined to properly constructed spray booths. Spray booths shall be so installed that all portions are readily accessible for cleaning.

If the segregated area is on an upper floor with valuable merchandise below, the waterproofing of the floor of the segregated spraying area is advisable and arrangements made to drain such floor to a safe location.

Open flame or spark producing equipment should be prohibited in the segregated spraying area.

All spraying areas should be kept as free from accumulation of deposits of combustible residue as practical, with cleaning conducted daily if necessary. Scrapers or other

The changes in this day and age are startling as developments in chemistry, electronics and nuclear energy are producing hazards unknown a short time ago. Even the known hazards have grown because our country is expanding, resulting in larger plants and larger fires.

An increase in the number of fires is to be expected during a period of increased production. Most fires can be prevented, but some may occur despite all precautions. What is most important is to avoid any conditions which will permit a small fire, what ever its cause, from assuming disastrous proportions. No fire department, efficient though it may be, can prevent a serious loss after fire has once reached major proportions in a large area of combustible material.

The measures of fire prevention and fire protection that should be employed to prevent these disastrous losses are well known. They are clearly outlined in the well established standards of the National Board of Fire Underwriters and the National Fire Protection Association.

The annual fire loss within the past 10 years has almost doubled. Property losses now aggregate over 1 billion dollars. In addition to property losses, what about the more important loss of life, and the other losses such as employment, production, business, valuable records, removal of debris and rebuilding?

Fire hazards are divided into two classes known as "common" and "special":

A common fire hazard is one which is likely to be found in all structures of each broad occupancy and which is not directly associated with the processing activities conducted therein. For example: heat, light, power, etc. are usually considered common hazards.

Special fire hazards are those arising from the individual occupancy or from inherent hazards peculiar to the occupancy. A lacquer spraying operation, for instance, in a plant engaged in manufacturing metal goods is considered a special hazard.

For the past decade matches—smoking, misuse of electricity, petroleum or its products and heating equipment are high on the list of fire causes.

Let us review some of the hazards responsible for the fires contributing to that 1 billion dollars aggregate property loss.

Careless smoking is probably the highest on the list of fire causes; therefore if smoking is permitted in a plant, establishment and enforcement of smoking regulations under proper supervision are in the best interest of employees and management. It is important that those areas where smoking is prohibited be posted at all times.

Fires caused by misuse of electricity can be reduced if listed equipment is installed by qualified mechanics in accordance with the

TABLE 2: FIRE SAFEGUARDS FOR WELDING & CUTTING

Welding and cutting equipment should not be used in any location where sparks or open flame would be a hazard. This applies especially where flammable vapors or liquids are present.

Welding and cutting work should be moved, where possible, to a location where there will be no possibility of setting fires.

If the work cannot be moved, all materials that burn easily should, if possible, be moved a safe distance away. With cutting this distance may need to be 30 or 40 feet.

Asbestos curtains or metal guards should be used to keep sparks close into the work and also prevent their lodging in combustible material or falling through openings to other rooms.

In locations where ignition of combustible material is possible, an extra man, known as a fire guard, should be employed to watch the sparks and to be ready to apply extinguishing agents promptly in case of fire. He should remain at the scene for at least ½ hour after completion of the work.

such tools used for cleaning purposes should be of non-sparking material.

Residue scrapings and debris contaminated with residue should be immediately removed from the premises and properly disposed of.

The storage and handling of flammable liquids should be in accordance with accepted good practice. The quantity of flammable liquids kept in the vicinity of spraying operations should be the minimum required for operations and should ordinarily not exceed a supply for one day or one shift.

Finally, spray finishing operations should properly be located in buildings protected throughout with an approved system of automatic sprinklers.

National Electrical Code and is properly maintained.

Spontaneous ignition is a frequent cause of fires. For instance, a rag saturated with raw linseed oil is likely, under certain conditions, to ignite spontaneously. Rags of this nature should be quickly disposed of.

The safety of life and property from fire or explosion in the spray application of **flammable paints and finishes** depends upon the extent, arrangement, maintenance and operation of the process. This process is so much a part of industry that the more important safeguards are indicated in Table 1.

Plant for Fire Hazards

PLAY IT SAFE IN WELDING & CUTTING OPERATIONS: Here, flammable materials have been covered with asbestos tarpaulin during welding operation. Although liquid leaks out and is ignited by welding spark, dry chemical puts it out.

Incidentally the number of different kinds of flammable liquids have greatly increased over recent years. Today, their varieties appear under thousands of different trade names, many without informative labeling as to their hazardous properties.

Welding and cutting operations are the cause of many fires, particularly where the work is done with portable equipment in temporary locations. These operations were responsible for the General Motors fire at Livonia, Michigan, said to be the largest industrial fire loss on record and the Luckenbach Steamship Company pier fire and explosion in Brooklyn, N. Y. which resulted in 10 deaths and 247 injuries.

Suggestions to prevent welding and cutting fires using portable equipment are given in Table 2.

Ammonium nitrate continues to grow in production and use. Its annual volume has grown over a 10 year period from 18,000 to over 800,000 tons. The fact that four of the ten largest accidental explosions of modern times were due to this product calls for caution in large volume handling of ammonium nitrate. Safety suggestions are shown in Table 3.

Plastics are not new, but the growth of the industry has been unbelievable; production in less than 20 years has increased from 45,000 tons to over 1 million tons.

The first of the plastics to be produced, cellulose nitrate, is also the most readily flammable. This material, also known as celluloid or pyroxylin, was developed in 1868 by a man seeking a substitute for ivory used in making billiard balls.

With the exception of cellulose nitrate the dangers of which have been known for many years, plastics now have been classified as to combustibility in the following groups.

Group 1. Those plastics which, in thin sections, burn at a rate somewhat less than common newspaper.

Group 2. Plastics which burn with a feeble flame which may or may not propagate away from the point of ignition.

Group 3. Those plastics which burn only during the application of a flame.

The fire hazards arising from the ordinary utilization of plastics, with the exception of cellulose nitrate, should be no greater than those arising from the use of the more common combustible materials such as wood and paper.

Magnesium is a silvery-white combustible metal weighing only two-thirds as much as aluminum and having good structural properties when suitably alloyed. For this reason, magnesium alloys find widespread use in the construction of aircraft, automobiles, etc. Powdered magnesium is used in signal flares and other fireworks to produce an intense white light.

The ease of ignition of magnesium depends to a large extent upon the size and shape of the material as well as the intensity of the ignition source. Where powder is present, the danger of a violent dust explosion will exist if a cloud of powder should be stirred up by hose streams or other means.

In machining magnesium the tools should be kept very sharp and ground so that there will be sufficient clearance to prevent rubbing on the sides and bottom of the tool. The tool should be backed off as soon as the cut is finished.

Cleanliness and quick and proper disposal of scrap magnesium are essential. There are many other precautions but these two if complied with will help greatly.

Atomic Energy

Atomic energy is a subject in which most of us are laymen. It is my belief that so long as it is in the hands of specialists little trouble should be experienced. If use of atomic energy becomes widespread and passes from the specialists to the average employee —conditions may change. Even so, it is also my belief contamination will be the real problem.

Radioactive contamination is not detectible except through the use of proper radiation detection instruments. A radiation specialist who knows his profession is almost indispensible, in analyzing the problem of decontamination. The job cannot even begin until the extent of contamination is known. It is important therefore that a radiation survey be made, when it is believed that contamination exists, as soon after the fire as possible. A loss due to contamination can be extensive in many respects even though the property loss is slight.

Any discussion of fire hazards in the plant would be incomplete without reference to the occupants. For example, in an industrial fire in New York City last year, 24 unfortunate human beings lost their lives, in a five story building with stairways and elevators at each end.

After the fire, it was found that even though the fire had extended from the second floor through the roof, the stairways were apparently undamaged. It would therefore appear that the loss of life was due to mass hysteria and panic.

TABLE 3: FIRE SAFEGUARDS FOR AMMONIUM NITRATE

This material should be stored only in masonry or fire resistive sprinklered buildings on skids or pallets on concrete floors with at least one foot clearance from walls.

Storage should preferably be in separate fire divisions or well segregated.

Piles of ammonium nitrate in paper bags should not exceed 10 bags high, 6 bags wide and 30 bags long with 3 foot separation between piles and with handling aisles of 10 feet every 100 feet.

Spilled material from broken bags must be rebagged immediately and, to avoid contamination to the contents, must not include floor sweepings. Floor sweepings and discarded bags should be immediately removed from the building and burned at a safe distance.

From an address presented at the 28th Annual Greater New York Safety Convention. Picture by courtesy of Ansul Chemical Co.

Every Skipper A Fire Chief

It's a fair bet your local fire chief won't ever be called to put out a fire on your boat. (He'd have a little trouble sailing his fire truck to the scene.) Therefore, you'd better learn the rudiments of the fire chief's trade: how to put out a fire.

You've probably read the new U. S. Coast Guard regulations on fire protection aboard boats over 16 feet in length. As of January 1, 1959, the Coast Guard removed its approval of vaporizing liquid fire extinguishers (carbon tetrachloride). Approved extinguishers must be installed no later than January 1, 1962. Coast Guard-approved extinguishing agents include dry chemical, foam and carbon dioxide (CO^2).

Boat owners are usually generous with advice and opinions, but selfish with space and weight. For this reason many skippers have indicated a preference for dry chemical fire extinguishers because they require less than half the space needed by foam or carbon dioxide. (Underwriters' Laboratories rates dry chemical tops in fire-fighting effectiveness.)

To help you enjoy a fire-free summer of boating, Robert A. Scheldt, Manager of Ansul Chemical Company's Marine Division, Marinette, Wis., has compiled a check list of DO's and DON'Ts. Use it as a guide while inspecting your boat for fire hazards and a refresher course in fire prevention. The list isn't meant as a cure-all—it's only as good as the person who enforces it.

DO—

Have Coast Guard approved extinguishers aboard—filled and tested.

Turn off lights, fires and electricity before refueling.

Close all hatches and ports *before* refueling.

Wipe up any gas spillage from deck after refueling.

Open all hatches and ports for ten minutes *after* refueling.

Inspect fuel vent pipe and remove any obstruction.

Tie up at wharf or dock during refueling operation.

Open engine hatch or cover while starting engine.

Flush and drain bilges periodically.

Locate stove's fuel supply above decks.

Ventilate galley.

Keep wiring, switchboards and electrical equipment in high, dry locations.

Protect electrical circuit with fuse breaker.

Locate batteries in well ventilated compartments.

Ground any metallic fitting located near extremity of mast or spar.

Get rid of paint rags, polishing cloths and oily waste.

Inspect fire extinguishers frequently and recharge if necessary. (See next page)

DON'T—

Smoke while refueling.
Fill the gasoline tank to the top.
Refuel while engine is running.
Interrupt flow of fuel into the tank.
Use gasoline as a heating or cooking fuel.
Hang dishtowels, clothing or other flammable material over stove.
Keep more than two gallons of emergency fuel aboard.
Keep flammable liquids in glass or other breakable containers.
Smoke or use open flame while working with paint or varnish removers.

Steps to Sanitation

(from page 23)

determine the amount of time necessary to perform any given cleaning task. These rates are available from many different sources and cover all types of cleaning. However, due to the different conditions prevalent in industry, the job assignment rates that are suitable for one business do not necessarily apply to another business. The best method to determine which rates to use is to actually try them out and see if they are fair, practical and can be accomplished in a given period of time. It may even be necessary to conduct studies and develop your own job assignment rates.

7. Determine when or on what shift the work will be done.

The daily basic cleaning of a sanitation program should be performed on the night shifts. The cleaning of the plant can best be performed when there is the least interference with and from the production departments. With the major cleaning being done on the night shifts, the areas can be maintained on an emergency or request basis on the day shift. The type of manufacturing and conditions in the various areas must be taken into account and allowances made for them. In some areas this may amount to assignments on both shifts, but for the most part on the night shift only.

8. Measure and apply job assignment rates to types of work areas.

Daily quality inspection and follow up on each area or job assignment is very important. Quality job assignment ratings, which are the basis for a fair and practical level of work performance, should be determined and used in the follow up. Many companies use a Daily Work Report or an Inspection Sheet to aid the supervisor in his follow up, and to inform management of the plant condition and work accomplished in connection with the sanitation program.

9. Calculate and write up individual job assignments and work schedules.

A sanitation program must possess a certain degree of "flexibility." In modern industry where there are frequent changes in production schedules, employee population, shift operations and plant arrangement, the sanitation program should be designed for flexibility. It may be necessary to transfer entire work schedules or job assignments from one shift to another. It should not be necessary to revise the program whenever a minor change is incurred. However, it is advisable periodically to take a survey of the program and rewrite the manuals, bringing them up to date.

10. Determine job assignment ratings and employee performance ratings.

Job assignment rates are used in the determination of the individual job assignments. In many cases, compared to the employee's previous assignment, the new assignment may constitute a radical change. With a new program of modern sanitation, frequently the employees will not understand the structure or organization of the system and how job assignment rates apply to sanitation work. To execute satisfactorily a fair work schedule the preparation leading up to the employee's acceptance must be considered. At Delco-Remy, even though job assignment rates were used in the determination of job assignments, the employee was not informed of any job assignment rate or any fixed time on any particular segment of his work. Attention must be given to the improvement of employee output and efficiency. This can be accomplished by developing work interest; providing proper materials, equipment and adequate facilities; specialized training; and effective supervision. The interest shown by supervision in their employees will do more than any other factor to increase employee performance. It may be necessary to use a process of corrective discipline on those employees who are reluctant to conform to the new program. Corrective discipline is a series of warnings, layoffs and possible discharge. This is not a desirable method of handling employees, but a supervisor must be firm in his operation of a sanitation program.

Developing the inner drive of sanitation employees so they desire to perform their assignment satisfactorily requires a great deal of understanding. In no other field is the area of handling employees more challenging than in sanitation work. The employee must be shown that management is sincerely interested in the individual, in his performance of the assignment. Several items that should be considered and discussed with the employee are: (1) Work equalization. (2) Type of work involved. (3) Ability and capacity. (4) Employee's responsibility. (5) Job safety. (6) Personnel grading list. (8) Recognition of meritorious work. (9) Advancement possibility.

11. Compile and print the sanitation program in manual form for distribution.

Material control and proper equipment usage are vital to any successful sanitation program. Floors and fixtures and equipment can be badly damaged if the wrong cleaning material is used. Proper control is necessary to avoid an excessive waste of materials and an abusive use of equipment. In order to have and maintain a progressive system of cost control it is desirable to have: (1) Properly instructed supervision who train their employees on material usage and equipment operation. (2) Studies made on materials and methods to formulate standard specifications. (3) Ample storage facilities. (4) Inspections made of proper material usage and equipment operation. (5) Research conducted to test and observe material samples for possible wider application. (6)

Comparing material quality and cost with similar products. (7) Equipment demonstration and observation for possible application towards labor savings. (8) Detailed records compiled on material usage and equipment maintenance providing a basis for material control and equipment replacement.

Adequate facilities should be made available to the sanitation employee in the performance of his assignment. A great deal of time is wasted when employees have to search for their materials and equipment, as well as wait in line to obtain materials.

Specialized training should be conducted to help the employee perform his assignment as efficiently as possible. This can be accomplished by either group or individual instruction. Actual demonstration by supervision or a trained and experienced employee is very effective. The use of films or film strips is an excellent method of communication in employee training. The four principal things that should be stressed are methods, procedures, material usage and equipment operation. Any amount of time spent on employee training will pay dividends in the sanitation program performance.

12. Train supervisors and explain program.

13. Review the program with plant supervision.

14. Establish the program, transfer necessary employees.

15. Follow up and review the program with plant supervision.

Without effective supervision no sanitation program stands a chance to succeed. Management in many organizations that do not have a system of modern sanitation fail to recognize the quality of supervisor who is necessary in order to obtain the potential return on its investment in sanitation. The desirable job requirements of a supervisor who is to administer a sanitation program should include: (1) Ability to handle people. (2) Creativeness. (3) Initiative and planning ability. (4) Cost consciousness. (5) Improvement minded. (6) Physical capacity. (7) Technical skill and knowledge. (8) Job interest, sincerity and enthusiasm.

The sanitation department can be used as an excellent source of training for supervision. The opportunity to gain experience in the many qualities desidered of a supervisor are readily available in sanitation work. Training programs conducted for supervision frequently include sanitation department experience in their agendas. At Delco-Remy skilled trades employees have been promoted to Sanitation Supervisors to gain valuable experience in sanitation work. Later they have been transferred to skilled trades foremen, and it is felt that the training and experience gained in sanitation could not have been secured by any better method.

Sanitation has gained a step in the right direction, even though the true value of sanitation has not yet been fully discovered. The recognition it is now achieving was not freely given, but had to be earned. In modern sanitation and planned systems of cleaning lies the future economical hope of sanitation in industry.

From an address presented at the 10th Plant Maintenance & Engineering Conference. Picture by courtesy of American Soap & Glycerine Producers, Inc.

VIBRATONES **produce more noise, use less current, take less space, less time to install and need less attention, than any audible signal now on the market.**

Every feature of their design and construction is a radical departure from past practice. The simple 2-screw installation and adaptability to existing wiring devices, is an electrician's delight and a money saver for you. "Horn signals can save you money and even lives."

If you haven't read about the *VIBRATONE* write for Bulletin #27.

FEDERAL SIGN and SIGNAL Corporation

8731 S. State St., Chicago 19, Ill.

(For details, use Key # F-15 on card on page 1)

VISITORS' SAFETY GLASSES

Managers of industrial plants or other facilities such as mines or machine rooms where visitors' eyes need to be protected will find that the new Sellstrom No. 100 guest goggles are an effective but inexpensive solution to the problem. Molded of sturdy, optical-quality Tenite propionate plastic, the goggles are worn to deflect grindings, small pebbles, dust and particles that might cause injury to the eyes, and also to absorb glare. They weigh less than one ounce, and are comfortable to wear either by themselves or over most prescription glasses.

Available in clear or green lenses, with matching frames, the Sellstrom guest goggles can be imprinted with the company name and distributed at the close of the visit as a small and useful souvenir.

For details, use **Key # EF-1** on inquiry card on page 1.

PLASTIC SAFETY SPECTACLES

A series of plastic safety spectacles that are light in weight, comfortable and attractive has been announced by Wilkie Optical Co. The molded frames are face-formed for added protection and have a reinforced bridge with extra large pads. Model GW-10 is an open frame spectacle for routine protection against flying particles, or with tinted lenses for glare hazards.

Shown above is the GW-25 which features more eye coverage, with interchangeable S-7 lenses and plastic sideshields that are perforated for ample ventilation. The GW-40, shown below, is identical

to GW-10 but has a flat-fold sideshield that is permanently attached to the temples for additional protection. All models are available with frames that are flesh colored, bronze or green.

For details, use **Key # EF-2** on inquiry card on page 1.

NEW SOFTIE CHEMICAL GOGGLE

A new yellow framed chemical goggle that combines easy color identification, maximum air circulation and increased splash protection has been introduced by the Glendale Optical Company. By coloring the vinyl frame of its Glensite "Softie" Chemical Goggle, the company has provided the chemical industry with a safety

EYE PROTECTION DEVELOPMENTS

goggle that is readily identifiable as to the type of operation in which it is to be used. The color conforms to the American Standards Association Color Code for acid operations.

Six splash-proof vents composed of aluminum heads over fine mesh screen provide better air circulation and prevent fogging even when the "Softie" is worn over other glasses. A self-adjusting, flexible vinyl noseguard gives the wearer maximum splash protection by sealing off the vulnerable areas around the nose and under the goggles. The wide angle lens of crystal clear .050 acid-resistant plastic which conforms to all Federal specifications for impact and pierce resistance permits maximum side vision. An acid-resistant, neoprene rubber headband adjusts instantly without cumbersome metal slides.

Molded from flexible, non-irritating, non-toxic materials, the chemical goggle is available in the 350 series with the yellow frame or in the 351 series with a clear frame.

For details, use **Key # EF-3** on inquiry card on page 1.

NEW HELMET HEADGEAR

The new "Fit-Rite" Headgear, according to the manufacturer, Flood Safety Products Co., is comfortable, durable and easy-to-maintain headgear for welding helmets, etc. The entirely new design "contours in" so that the whole band fits the head, not just at the bottom. And the rear strap is offset downward to give a lower, firmer, hat-like support for the helmet.

Instant adjustment to correct size is simply made by turning the rear ratchet knob, which holds firmly after the size is selected. Pivoting cross strap automatically positions on head where it will be the most comfortable. Eight holes, four at each end of strap, provide a full range of crown-height adjustment.

Headgear is attached or detached from helmet in a matter of seconds —without tools and without removing friction units. To attach, merely slide U-bracket (one on each side) into slotted bar where it snaps into position. To detach, simply reverse the process. The Fit-Rite Headgear is made of tough, ebony-finished Nylanite (nylon), a smooth flexible material that will not warp, shrink or become brittle with use.

For details, use **Key # EF-4** on inquiry card on page 1.

HIGH VOLTAGE FLASH HELMET

A new safety helmet for protection against high voltage electric flash, as produced during switch throwing operations, has been developed by the American Optical Co. To protect the face, head and shoulders, the unit consists of a vulcanized fiber headgear equipped with a clear acetate window and a fire-resistant front bib and rear drape. Glass-reinforced neoprene is used for the bib and drape, which are attached to the fiber headpiece and acetate facepiece by snap fasteners. For visual protection against ultraviolet and infrared radiation, the helmet is also furnished with a green acetate facepiece.

For details, use **Key # EF-5** on inquiry card on page 1.

CUP-TYPE SAFETY GOGGLES WITH SOFT SPONGE PAD

Bausch & Lomb Optical Co. announces a complete new line of cup-type safety goggles, including eight new models designed specifically for heavy industrial operations. Improved in design and construction, these goggles assure the greatest degree of eye protection. Injection molded from tough thermoplastic, they have high impact resistance and their contour design guarantees safety and fitting comfort. All new styles have a lustre finish which gives added ease to cleaning and sterilization.

Highlighting two models of the new line is an exclusive removable soft-sponge face pad. Snaps at top and bottom of pad make it easy to detach for cleaning or replacement. This new feature is especially helpful in assuring sanitation when goggles are worn by more than one person.

The four new chipper-type goggles have heat-treated Bal-SAFE

lenses and new perforated side shields for ventilation. Adjustable head band is standard equipment.

New cup-type goggles for welders feature Arc-Ban, a dark green glass which provides complete protection from harmful infrared and ultra-violet rays. Arc-Ban is available in 10 different shades to allow proper radiation protection for every type of welding. Newly designed side shields guard the eyes against sparks and side flashes.

For details, use **Key # EF-6** on inquiry card on page 1.

FAST-FITTING GOGGLE FRAMES

The Rapido Line of universal, custom-fitting safety goggle frames to accommodate plastic, glass and prescription lenses has been announced by Watchemoket Optical Company. These new frames feature: 1) Patented Retrax Temples which wearer telescopes in or out for a perfect, comfortable fit; 2) A Universal Nosebridge which rests comfortably on any shape nose; 3) A Spread-End Frame which facilitates 60 second lens replacement. Rapido frames are available with or without side shields. Additional features include: extra deep lens channels to securely lock the lenses, nylon hinges for strength and durability, smooth temple hooks which rotate 360° and a choice of frame colors. Rapido frames are also available with plastic or hardened safety glass, clear or green, S7 lenses.

For details, use **Key # EF-7** on inquiry card on page 1.

SPLASH-RESISTANT CHEMICAL GOGGLE

A new safety goggle for protection against splash, spray and impact exposures, recommended for use in the chemical industry and where humid conditions prevail, is announced by American Optical

Co. The goggle is indirectly ventilated—no vents in frame or holes in lens for splash-resistant safety. It is said that tests prove this goggle twice as fog-free as similar goggles. The frame is molded from non-irritating and non-toxic clear vinylite plastic. Frame has been designed to fit over all personal and safety prescription glasses. One-piece lens is made of impact-resistant acetate and is said to conform with high safety and optical standards. Lens is available in clear or green. The new goggle is light-weight, comfortable and provides wide angle vision. An all-rubber headband holds goggle firmly in place. All parts are replaceable, hence goggle is easy to clean and sterilize. No metal parts.

For details, use **Key # EF-8** on inquiry card on page 1.

LENS CLEANING CABINET

To promote prompter, easier care of industrial eye-protection equipment, Mine Safety Appliances Company has made available a new goggle-cleaning station with fingertip convenience. Feature of the new low-cost station is a compact

all-metal cabinet which has a capacity of 200 sheets and provides a fresh tissue each time one is removed. Cabinet measures six inches high, 5¼ inches wide and six inches deep. Lens-cleaning Fogpruf fluid is dispensed in exact amount from unbreakable, leakproof polyethylene squeeze bottle, which can be used separately in locations that do not warrant cabinet installations. Cleaning and anti-fogging agent of fluid removes dirt and grime without streaking, and coats lens surface with microthin film that protects against fogging for hours after application.

For details, use **Key # EF-9** on inquiry card on page 1.

FIBER GLASS FACE SHIELD

Translucent fiber glass shell combines strength, long wearing quality and heat resistance in this new face shield developed by Chicago Eye Shield Co. New type window retainer provides positive seal of plastic window over rubber cushion gasket. Toggle locks permit use of windows of various thickness or more than one window at one time in cases where thin cover windows are desirable. An entirely new headgear on this Model 438 FT is adjustable three ways. Headgear may be snapped out and replaced with hard cap when additional head protection is required.

For details, use **Key # EF-10** on inquiry card on page 1.

NEW FACE SHIELD

Welsh "Trojan" face shield is designed to fit everyone comfortably. New polyethylene headgear has

simple ratchet adjustment—is easily adjusted to desired head size by simply pressing and turning small knob at rear. Headgear automatically locks to size when knob is released. Top band adjusts quickly and easily to head shape with pin lock. Clear or green acetate windows, in 4″, 6″ or 8″ lengths and in .020 and .040 thickness, are easily installed on wide fibre spark guard with three positive snap fasteners. Manufactured by Welsh Mfg. Co.

For details, use **Key # EF-11** on inquiry card on page 1.

TWO-TONE SAFETY SPECTACLE

A new Tutone-frame safety spectacle which combines style and comfort with necessary protection has been introduced by the Glendale Optical Company to meet the needs of plant management, personnel, visitors and others not directly engaged in activities requiring heavier eye protection. It has a handsome two-tone frame of highest quality sheet-stock cellulose acetate butyrate and features a universal bridge which will fit more than 90 percent of all users.

Interchangeable S7 lenses of #150 Glenrock superhardened glass are pierce and impact resistant giving maximum protection. Precision-made 7 barrel hinges eliminate temple rocking. Adjustable wire core spatula temples, ranging from 5½ to 7 inches, provide added comfort for men and women alike. The new safety spectacle is available with clear lenses or with light, medium or dark green lenses for ultraviolet and infrared protection.

For details, use **Key # EF-12** on inquiry card on page 1.

THE NEW DUO DOES DOUBLE DUTY

...SERVES TWO

...SAVES SPACE

...SAVES WATER

...SAVES JANITOR WORK

Floor Clearance

Foot-Control Eliminates Faucets

WHERE DUO-WASHFOUNTAINS ARE USED

- Main Washrooms
- Auxiliary Washrooms
- Visitors' Washrooms
- Executive Washrooms
- In Various Parts of Plant
- Near or in Cafeterias
- In Laboratories and Drafting Rooms

For Sanitation reasons alone, many have selected Bradley Duo-Washfountains. And they save space, water and maintenance as well.

Water supply is foot-controlled, the spray coming from the central sprayhead that replaces bothersome faucets (spring-type or conventional). Thus chance of spreading infections through such contacts is eliminated entirely.

Water consumption is reduced with *no water wasted* because removal of foot cuts water supply instantly. The two-person self-flushing bowl prevents collection of the soiled residue of previous users.

Duos in the new beautiful design are furnished in vitreous porcelain enamel (five colors and white) and stainless steel. For all details see new Bulletin K1204—copy mailed on request.

BRADLEY WASHFOUNTAIN CO.,
2229 W. Michigan St.,
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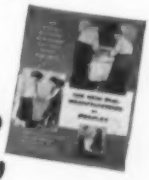
Write for Bulletin K1204



BRADLEY Duo Washfountains

Distributed Through Plumbing Wholesalers

(For details, use Key # F-16 on card on page 1)

"UNIBRIDGE" SAFETY SPECTACLES

A universal bridge, which will fit more than 95% of employees without need of adjustment, is the feature of the "Unibridge" safety spectacles made by Welsh Mfg. Co. Time-consuming fitting adjustments can be eliminated; inventory stock requirements reduced. Bridge blends comfortably to nose contours. Modern butt-joint temple

construction provides extra strength and better fit.

Available in three temple styles: spatula, metal paddle and comfort cable. Choice of three colors in butyrate frame: copper, cordovan and pink crystal. Lens shape and construction in S7 Square Shape clear or green heat-treated glass and CR39 plastic. Eye size in 46 mm and 48 mm.

For details, use **Key # EF-13** on inquiry card on page 1.

LENS CLEANER NOW IN SQUEEZE BOTTLE

K-Lens-M lens cleaner is now available in a new plastic squeeze bottle for personal, desk, bench, and utility use. The new bottle, announced by the Wilkins Co., Inc., is unbreakable. A gentle squeeze results in a fine spray of cleaner fluid on the eye glass or goggle lens, which can then be quickly wiped with a K-Lens-M Lens Tissue. A hinged snap cap is attached to the squeeze bottle spray and can be quickly flipped open or snapped shut to prevent leakage. The plastic container is easily refillable. It is designed for one hand use, with no cap to lose and is effective on both glass and plastic. Cleans without leaving any film or streaks.

For details, use **Key # EF-14** on inquiry card on page 1.

IMPROVED WELDING GOGGLES

A new plastic eyecup is the principal feature of improved welding goggles offered by Sellstrom Manufacturing Co. More efficient antifog ventilation is also claimed to be an advantage built into the new No. 500 goggles. Greater comfort and safety are provided for welders because the one-piece eyecup is stronger and easily conforms to facial contours. The full eye area receives maximum protection and all light sources outside of the lenses themselves are positively excluded. The manufacturer says these goggles are designed for use in all acetylene welding and cutting, as well as for open hearth furnace work. A wide choice of lenses and lens shades is offered, including Federal specification grades.

For details, use **Key # EF-15** on inquiry card on page 1.

MULTI-FIT SAFETY SPECTACLES

A new line of safety glasses has recently been introduced by Fendall Company. The new line incorporates a new "Multi-Fit Bridge" which is claimed to fit more than 90% of all employees, including male and female. The new bridge seats itself automatically. Self-adapting features with no involved try-ons or bridge adjusting reduce fitting time. The manufacturer states that in the new bridge design, nose pads and inner bridge surface form a continuous support across the bridge of the nose. With weight distributed over a much larger area, the glasses actually feel lighter on the face. The new design also overcomes the tendency of safety glasses to slip downward on the nose.

For details, use **Key # EF-16** on inquiry card on page 1.

PLASTIC EYE SHIELDS

An all-plastic eye shield, "E-Z-Fit," has been announced by Kerrco Products. The molded construction has been designed to fit the contours of the face comfortably and can be worn with or without prescription glasses. An adjustable elastic head band holds the eye shield in place, while ventilating holes on the sides of the shield prevent lens fogging and provide cooler comfort. The units are available with crystal clear or green tinted lenses.

For details, use **Key # EF-17** on inquiry card on page 1.

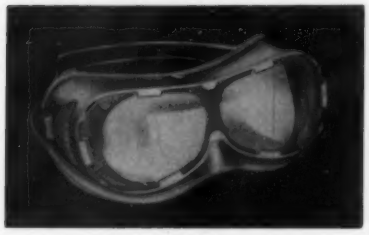
CAP BRACKET FOR ATTACHING EYE PROTECTION EQUIPMENT

A new quick-release type of bracket for attaching eye protection equipment directly to hard caps has been announced by E. D. Bullard Co. The brackets can be used for any type of goggle that utilizes an elastic headband, for face shields and for welding helmets. Shields and helmets can be swung up away from the face when necessary, and goggles also can be lifted up onto the front of the cap. Can be used on aluminum or plastic caps.

For details, use **Key # EF-18** on inquiry card on page 1.

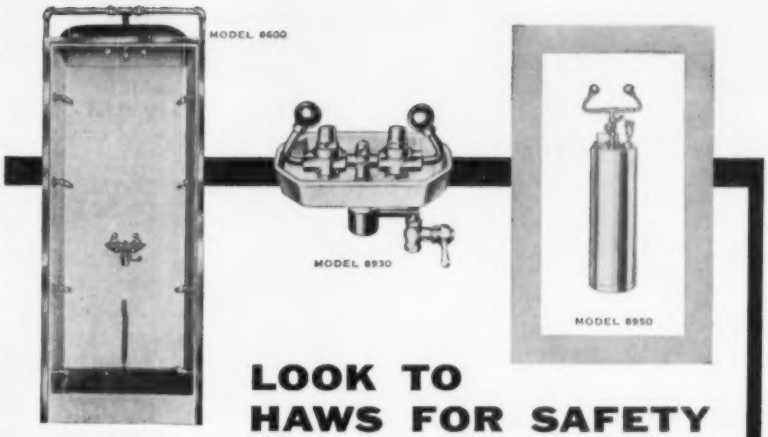
PLASTIC UTILITY GOGGLES

The Vista-View—a new, lightweight, utility goggle has been developed by the American Industrial Safety Equipment Company for a wide variety of uses. Its large size polyethylene frame fits comfortably over the largest prescription glasses. The unique louvered side and front assure ample ventilation, yet prevent entry of flying particles. The



single lens is made of optically correct, shatterproof, impact resisting plastic, and snaps securely in place without the use of rivets or fasteners. The clear, wide angle vision and comfortable feather-weight should make the new goggle desirable for a wide variety of hazardous operations.

For details, use **Key # EF-19** on inquiry card on page 1.



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Only HAWS provides a complete line of eye-wash and drench shower units — performance-proven models to serve virtually any industrial and laboratory need! Instant water irrigation washes harmful irritants from exposed areas for immediate first aid before medical help arrives — or as a routine precautionary measure. HAWS will supply the equipment that best fits your operation!

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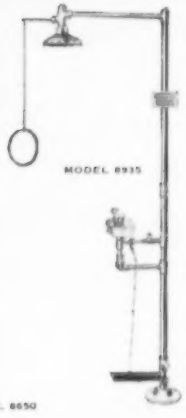


MODEL 8650

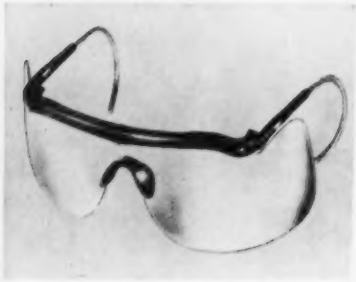
(For details, use Key # F-17 on card on page 1)

NEW SAFETY GLASSES

Bausch & Lomb Optical Co. announces C-20 Safety Glasses for industrial applications, combining long-wearing comfort and functional good looks with the protection of safety glasses. It is a combination plastic and metal frame, with top rims and temples in dark brown, contrasting with white metal eyewires and engraved bridge. A strong front of nickel-silver completely encircles the lenses, assuring maximum frontal protection. The plastic and metal has been designed so that there is nothing to break, shrink or warp. The frame features a sturdy bridge construction united to the eyewires by wide solder joints.

The C-20 has high quality lenses, heat-treated for impact protection. "Bal-Safe" lenses can withstand a blow up to 14 times heavier than that required by Federal specification, the company reports. Modern lens shape provides a wide field of vision, and will accommodate any individual prescription, single vision or bifocal. Where glare protection is necessary, models are available with green lenses in two different shades. The frame features a choice of spatula or cable temples. Side shields can be easily attached to provide full side protection. They are available as separate units or as part of the complete frame.

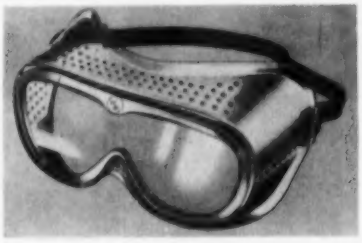
For details, use **Key # EF-20** on inquiry card on page 1.



"WRAP-AROUND" PLASTIC GOGGLE

A new plastic goggle, manufactured by the Pulmosan Safety Equipment Corp., is said to offer "all-around" protection, light weight and comfort. An extra large one-piece acetate lens, which can be replaced easily, is designed with "wrap-around" side shields which may be tucked inside the temple if desired. The brown acetate frame with an adjustable metal core cable may be worn over prescription spectacles. Goggle is individually packaged in a plastic bag.

For details, use **Key # EF-21** on inquiry card on page 1.



SOFT-SIDE GOGGLES

Greater working vision is provided with the improved Zephyr soft-side goggle announced by Welsh Mfg. Co. Angled lens for increased working vision and super transparency of frame for better peripheral vision are key features of the new Zephyr. 300% more top ventilation prevents fogging. Permanent locking pin in every lens assures easy, positive lens assembly . . . no worn out snaps. Fit comfortably over largest prescription spectacles.

Available in five ventilation styles: 1070A—regular perforations for average conditions; 1071A—screened parts for extreme dust conditions; 1072A—baffled parts for acid and splash conditions; 1073A—no ventilation for vapor conditions; 1074A—perforations on bottom and side only for acid and splash conditions.

For details, use **Key # EF-22** on inquiry card on page 1.

NEW METAL FRAME SAFETY SPECTACLES

New-concept safety spectacles with an endpiece screw-guide for quicker lens changing meet all ASA requirements for frame construction, structural strength and design, non-flammable qualities, and resistance to corrosion. The unit features: 5-barrel nickel steel hinges; choice of sideshields, plastic or new

stainless steel integrally molded in plastic frame; spatula temples with plastic paddle tips or spatula-cable type temples; smooth finish frame and with a choice of hardened glass or Optilite lenses in plano or Rx. Manufactured by the U. S. Safety Service Co., this spectacle is available in 3 eye sizes and 5 bridge sizes with a choice of nose pads.

For details, use **Key # EF-23** on inquiry card on page 1.

NEW STYLED SAFETY SPECTACLE

The new "Black Diamond" (GW-50) safety spectacle developed by Wilkie Optical Co. is designed for attractive style appeal as well as eye protection for industrial workers. The plastic frames are in the modern square shape and are light in weight. They are popularly styled with light-colored rims and with the tops of the frames and the temples accented by dark plastic. The S-7 safety lenses are available in plano form, clear or green, and can be ground to individual prescription.

For details, use **Key # EF-24** on inquiry card on page 1.

CUP-TYPE PLASTIC SAFETY GLASSES

Translucent Plastic was chosen to make new all-plastic safety glasses with side shields. Designed to widen the range of industrial applications calling for "cup-type" total enclosure protection, the new protective glasses are lightweight and extremely comfortable to wear. Broad-bearing nosepads give even distribution of glass weight, and at the same time, protect the eyes from foreign particles at a common point of entry. Plastic side shields are securely hinged to frames. Perforations in side shields afford good eye ventilation and also eliminate the problem of bothersome lens "clouding." Made by the Chicago Eye Shield Co.

For details, use **Key # EF-25** on inquiry card on page 1.

PADDED EYEWEAR CASE

Bausch & Lomb Optical Co. has designed a new open-end case for industrial eyewear to provide necessary protection and yet is flexible and compact for carrying ease. The new case (Model 5–37–97) is made of durable pig-grain vinyl which is stain resistant and easily washable. A soft, urethane padding has been heat-sealed between the outer covering and the flocked vinyl lining to absorb shock. Case edges are sealed and stitched with heavy nylon thread to prevent ripping. The soft, smooth lining prevents scratching of the lenses. The streamlined case weighs less than two ounces.

For details, use **Key # EF-26** on inquiry card on page 1.

The highest award of the National Safety Council has been presented to The National Supply Company's plant in Torrance, Calif. The Award of Honor is based on the plant's low rate of injuries in 1958. The plant's injury frequency rate was 91% better than its "par" rate and its injury severity rate was 86% better. The Award of Honor is in addition to an Award of Merit received by the plant for operating more than 1,000,000 man-hours accident free.

• • •

A record low for accident frequency for the first quarter of 1959 was achieved by Allied Van Lines, Inc., Richard LaBelle of Minneapolis, president of the company announced. The frequency rate for this first quarter was 1.17 accidents per 100,000 miles, approximately 20 percent below the previous record for the quarter, set last year. Allied distance travelled for the quarter was up nearly two million miles over the same period in 1958. This frequency includes local and long-distance accidents.

• • •

The winners of the National Safety Competition conducted by the United States Bureau of Mines, Department of the Interior, have been notified they will receive the bronze Sentinels of Safety trophy awarded each year by *The Explosives Engineer* magazine to the first place winners in each classification. The winners of the competition for the year 1958 are: **Anthracite Underground Mine**—Germantown Colliery, Raven Run Company, Centralia, Pa.; **Bituminous Coal Underground Mine**—No. 14 Mine, U.S. Steel Corp., Gary, W. Va.; **Metal Underground Mine**—Pioneer Mine, Oliver Iron Mining Co., Ely, Minn.; **Nonmetallic Underground Mine**—Grand Rapids Mine, Bestwall Gypsum Co., Grand Rapids, Mich.; **Open-Pit Mine**—Erie Commercial Mine, Pickands Mather & Co., Hoyt Lakes, Minn.; **Quarry**—Thornton Quarry, Material Service Corp., Thornton, Ill.

Every employee of the winning mines and quarry receives from the Bureau an individual certificate commemorating his part in the winning of the competition. Certificates of Achievement are awarded by the Bureau also to each mine and quarry whose position in the contest was among the first four in its respective group.

• • •

The Borden Company, which operates the fifth largest truck fleet in the United States, has cut vehicle accidents by nearly 10 percent over the past five years, although its trucks traveled 20 million miles farther last year than in 1954. Borden's Safety Department announced that the company's 11,588 trucks and other vehicles reported a total of 3,041 accidents in more than 145 million miles on the road last year. In 1954 its fleet of 10,548 vehicles had 3,343 accidents.

The Safety Department also reported disabling injuries to employees down from 1,270 in 1954 to 1,112 last year, despite an increase of more than a million man-hours worked.

• • •

Remington Arms Company, Inc., has been awarded a special plaque for operating a year and a half without a disabling injury among its 5,000 employees. The award was given by Liberty Mutual Insurance Company. Remington operated from June 24, 1957, through December 31, 1958, or nearly 15,500,000 man-hours, without an injury serious enough to cause an employee to lose time from work.

• • •

J. P. Construction Company of Chicago Heights, its management and employees, were awarded a safety plaque by the Standard Accident Insurance Company, their insurance carrier. The award is for working 1,000,000 man-hours without a disabling injury between 1953 and 1959. J. P. Construction Company specializes in highway construction and repair which is generally recognized as hazardous work.

• • •

National Constructors Association has reported that the safety record of its members was approximately 25 percent better than the heavy construction industry as a whole. Its 23 members had an average accident frequency rate of 15.61 which compares with a frequency rate of 19.72 reported by the National Safety Council in heavy construction. The NCA severity rate was 1917.62 compared with 2616 for heavy construction.

NCA "Safety Awards" were presented to the six member companies with accident rates lower than the Association average: Blaw-Knox Company; Chemical Construction Corporation; The H. K. Ferguson Company; Kaiser Engineers, Division of Henry J. Kaiser Company; Koppers Company, Inc.; and Arthur G. McKee & Company.

• • •

Workers in the iron and steel industry were safer than ever before during 1958, according to American Iron and Steel Institute data. Based on accidents involving time lost from work (or time charged) a record low of 3.21 accidents per million man-hours worked occurred in steel plants last year. That compares with a frequency of 3.48 in 1957, the lowest prior year in accident frequency.

N. Y. Safety Convention

(from page 8)

perity Service Stories, Inc., of Long Island City, explained how the accident—or "preventident"—rate was reduced.

Declaring that 98 percent of accidents were preventable, Mr. Zane said his company stressed the term "preventident" to bring to employees a realization that mishaps could be prevented by avoiding hazardous situations and correcting hazardous habits.

He said the new program was instituted in June, 1957, after a study of records for 1956 showed the peaks and lows of accident experience followed exactly the monthly business charts of the highly seasonal industry. This showed, he said, that not enough attention was being given to employee selection and job training in the periods of temporary hiring. A far-reaching safety program, covering both new and old employees, was instituted. As a result, he said, the accident graph levelled off. The total number of lost time accidents fell from 45 in 1956, to 32 in 1957, and 16 in 1958.

In describing his company's hand protection program, Thomas H. Bullard, safety manager of the Budd Co., Philadelphia, pointed out that: "If we would only be realistic about the matter, we would see that any money spent for protecting the fingers or hands will prove much less than the expense of treating a serious injury to the fingers or hands."

Mr. Bullard said, "We provide gloves, handpads and armguards to our employees where they are required for protection on the job, at no cost to the employee. This has been our policy for the past seven or eight years and believe me, there are more persons in our organization using gloves now than ever wore them when the employees had to purchase them. In fact, we must constantly be on guard to see that they are not used on jobs where they may create a hazard, i.e. on rip saws, roller straighteners, etc."

Although 15 million employed Americans are covered by industrial vision programs, the impact of this sight-conservation and accident prevention effort has hardly been felt in small plants, Dr. William L. Roberts, president of the New York State Optometric Association, declared.

Dr. Roberts said industrial vision programs had made great headway in large industrial plants since World War II brought an "awakening" of the connection between faulty vision and many types of accidents. Declaring that "a vision conservation program for any plant, regardless of size, is not an expense but an investment," Dr. Roberts said it would yield an immediate return in the practical elimination of eye injuries, marked improvement in the general accident experiences, reduction of mistakes and of spoiled work. He said it would also bring long-term gains such as greater job satisfaction among employees, lower turnover, reduced training time, better placement, and improved morale.

The State Optometric Association has sponsored a voluntary, non-profit organization, New York State Vision Services, Inc., through which industrial concerns may contract for expert assistance under a system of pre-determined costs and established standards of service. As a first step in the program, the visual abilities of all employees are charted at the plant and the seeing demands of various jobs are studied. Dr. Roberts said this was done with a minimum of interruption to production and took less than a week in the average small plant.

"Part two consists of an eye examination and complete study of visual performance for those with visual shortcomings," he said. "These services are performed in the offices of the Vision Services panel members. Equipped with information developed out of the plant survey, the optometrist writes an occupational prescription, orders an appropriate device that both corrects and protects vision and fits it to the employee. Part-time consulting service is continued throughout the year to take care of new employees, changes in plant processes and to keep the program running smoothly."

Dr. Roberts said the non-profit organization sent to plant management a monthly statement covering all services rendered by panel members. Optical equipment is billed separately, and at its manufactured cost.

Fire Protection

Fire fighters have found that sometimes the hotter the initial blaze the easier it is to extinguish it. How New York City fire protection laws were changed to take advantage of this fact was explained by Acting Deputy Chief John P. Mullen of the Fire Department's division of fire prevention.

"Until very recent date, piers have been inadequately protected against fire," Chief Mullen said.

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One of the difficulties in fighting pier blazes is the difficulty of access to the fire, especially when it breaks out in the underdeck substructure, he declared.

He said that insurance underwriters and the Fire Department "have from time to time made specific recommendations for protective measures which should be installed on New York City piers and similar waterfront structures in ports generally."

Chief Mullen said the destruction by fire on Sept. 28, 1947 of Pier 57, North River spurred the enactment of new regulations for waterfront fire protection. Chief Mullen said one of the changes required construction of non-combustible truss curtains at definite intervals on piers, extending from the bottom chords of the roof trusses to the roof itself. This, he said, "will concentrate the hot air and flames into the area immediately above the fire in order to accelerate the action of the sprinkler heads and prevent mushrooming of hot gasses."

Other changes required construction of fire-resistant walls at 140 to 160 foot intervals in the substructure under the deck, provided with dry pipe sprinklers on both sides. They required also that 6½-inch hose hole openings, protected by covers, be placed in pier decks at 25-foot intervals to enable firemen to direct streams into the substructure.

The average industrial plant is not properly protected against the outbreak of fire during non-working hours and holidays. W. L. Rossnagel, safety and fire protection engineer of the Consolidated Edison Company of New York, said: "It is a strange fact that in the average industrial plant there are many high salaried members of management and supervision present during normal working hours to assume all responsibility should a fire occur or some other emergency develop. But at night, and on week-ends and holidays, they trust the safety of the million-dollar plant to the judgment of an elderly, untrained and possibly disabled watchman who may, or may not, conscientiously do his job.

"A younger, well trained mechanic who is familiar with the entire plant should be on duty in off hours. And his pay should be commensurate with his responsibility. Such a watchman should be well acquainted with the location and operation of all valves, electric switches, the heating plant, the air conditioner, and so forth, and he should be trained in the proper use of all extinguishing apparatus. Then, should a fire occur, a pressure pipe break, the oil burner fail, or any other emergency occur, he will be able to cope with the situation immediately."

Mr. Rossnagel said the United States "has the highest per-capita fire loss of any country in the world." He reported that fires in this country claimed 11,000 lives annually and caused property loss "well over a billion dollars."

The shipbuilding and ship repair industry has devised costly safeguards and procedures against the fire hazards of welding, gas fumes, oil and other combustibles, but finds itself stumped by one persistent danger—crewmen who set their mattresses on fire.

"There is one fire hazard that we have been unable to cope with, and that is crew members falling asleep in their bunks with lighted cigarettes and setting the mattress on fire," said B. Lee Rogers, manager of safety and security of the Maryland Shipbuilding & Drydock Company.

Mr. Rogers corrected what he said was a common notion that oil and debris floating on the water won't burn. He told how burners

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Sheergrip 0794	10½"	Natural Latex	.025 (dbl)	Non-Slip
Sheergrip 0763	18"	Natural Latex	.023 (dbl)	Smooth
Sheergrip 4773	34"	Natural Latex	.035 (dbl)	Smooth
Sheergrip 7852	10½"	Neoprene Latex	.019 (dbl)	Smooth
Sheergrip 0808	7½"	Natural Latex	.020 (dbl)	Smooth

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(For details, use Key # F-19 on card on page 1)

working on the side of a ship let a hot plate fall. It landed on a small floating plank, surrounded by oil and debris. The wood started burning. This heated the oil and set the debris afire, sending flames up the side of the ship, burning some stage boards, air hose and welding cable. He described various fire precautions and told of accidents, some fatal, that resulted when the precautions were ignored.

First Aid & Hygiene

There is probably more poor surgery performed on minor cuts and bruises than on major lesions, Dr. Frederick Lee Liebolt, attending orthopedic surgeon at the New York Hospital and Hospital for Special Surgery, told the convention's industrial nursing session.

"An inconsequential wound of the hand by an ice pick or a small piece of glass may be treated by one or two skin sutures without the realization that the underlying finger tendon is interrupted or ruptured," he declared. "General practicioners and younger surgeons frequently are ill prepared to deal with the ambulatory surgical conditions because of lack of experience, equipment and assistance. Surgeons who have large office practices and who are busy with major operations in the hospital have neither the time nor inclination to perform ambulatory surgery."

Dr. Liebolt said the expansion of industrial processes had in turn brought about an expansion in the functions of industrial nursing. He said industrial nurses and young company doctors had situations and responsibilities thrust on them today that their counterparts of a generation ago did not have to cope with.

Dr. Liebolt urged them to attain the highest professional competence but warned them at the same time "not to assume responsibility beyond your capability." When in doubt, call in more experienced help, he advised.

While there is need for further research in industrial hygiene, there is just as great a need today for widespread application of what has been learned in recent years about toxicity limits, noise and other occupational health hazards.

"There are many challenges remaining in the field of industrial hygiene," said George M. Wilkening, industrial hygienist for the ESSO Standard Oil Company. "One of the principal challenges in this field is not a technical one. It is the challenge of making widespread application of knowledge which is already available. Information on hazards and engineering methods of control have been carefully worked out for untold numbers of problems, yet we continue to find faulty practices.

"The need for continued research into occupational diseases and their prevention is always with us. This has become especially critical with the daily influx of new exotic chemicals and processes in modern industry."

"We do not yet have good information on the synergistic or additive effects of exposures to mixtures of chemical compounds even though a Threshold Limit may have been established for each chemical in the mixture."

Patients bring their ailments into the hospital, but nurses and orderlies often acquire ailments on the job. One of the most frequent types of hospital-acquired injuries is sprains and back aches resulting from lifting patients or inanimate loads, according to Alan Leventhal, chief physiotherapist of Maimonides Hospital in Brooklyn.

Should Play Major Role

"The physiotherapist with his specialized knowledge of body mechanics should play a major role in the prevention of back injuries," Mr. Leventhal declared. "His professional skill should be utilized in the indoctrination of employees as to correct methods of lifting and related matters, as well as in the treatment of back pain once it has occurred."

Mr. Leventhal said that since Maimonides Hospital instituted a program in correct lifting methods "we have seen a reduction in lost-time accidents due to faulty lifting methods."

"Thus far, all the lifting accidents that have occurred have happened to people who have not as yet attended our classes," he said. He demonstrated correct and improper lifting methods, using a dummy.

Flowers and books aren't all that is carried into hospitals by friends of patients. The convention was told by a bacteriologist that well-wishers are sometimes unknowing carriers of Staphylococcus aureus, a germ that causes dangerous infections. Dr. Alfred J. Weil, director of bacteriology at The Bronx Hospital, said that even members of the medical and nursing personnel are sometimes carriers of the highly infectious germ, which has developed resistance to antibiotics. Dr. Weil said its effects on hospital patients, weak from other ailments, was more serious than on the carriers.

Hospital Infections

Declaring that no single method was available to make hospitals safe against infections, Dr. Weil said "painstaking, cooperative efforts from all departments of a hospital are needed to safeguard patients." He outlined six "areas of preventive action" as being of particular importance.

He described them as follows:

1. Isolation of patients with staphylococcal infection.

2. Scrupulous sterility in handling patients in the operating room and ward.

3. Elimination of carriers among the medical and nursing personnel.

4. Sterilization of all articles, particularly bedding, in close contacts with patients.

5. Avoidance of spreading bacteria with dry dust and air currents.

6. Important contributions to safety from infection can be made by teaching, supervision in all departments and by engineering.

The mystery of why so many patients fall out of hospital beds was explored at the convention, but the puzzling question remained unanswered. Dr. Frederick Grubel, associate director of Montefiore Hospital, said a study of accidents in that institution in the last six months showed there had been 286 falls of all kinds and that in 40 percent of them the patients had fallen out of bed. Of the falls from bed, more than half (53 per-cent) were from beds equipped with siderails.

"The most puzzling accident is the fall from bed," Dr. Grubel said. "Where should a person be safer than when lying in his own bed? The most obvious safeguard seems to be the attachment of siderails. With solid metal rails on both sides of the bed, the patient just should not be able to roll off the bed. However, the siderail represents to many patients the symbol of restriction of freedom, or, even worse, of the special severeness of his ailment.

"Usually very detailed rules for siderails installation are established by the hospitals, with the full blessings and encouragement of the insurance companies and somewhat reluctant blessings of the medical staff who are keenly aware of the adverse psychological impact of these rails."

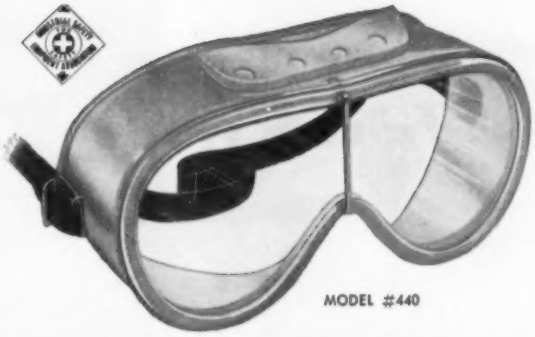
Dr. Gruber said it was the practice in most institutions to use siderails, especially during the night, for unconscious or heavily sedated patients, the unruly, the very old and the very young.

"Unfortunately, the statistics I have available do not prove the effectiveness of the siderails. The puzzle can only be solved if somebody finds a way of determining how many more patients would have fallen from bed if there had not been siderails in position.

Dr. Grubel stressed "good housekeeping" and constant vigilance by hospital personnel as the most effective means of preventing all types of falls and other accidents.

Despite the increase in air pollution studies in the last few years, no simple yardstick has yet been devised for determining when air ceases to be "pure" for breathing, H. H. Fawcett, Safety Supervisor of the General Electric Research laboratory at Schenectady, told the convention's shipbuilding and repair yard session. Declaring that firefighters and others who inhale smoke and fumes too often return to their tasks too soon after emergency treatment, thereby suffering serious inhalation effects, Mr. Fawcett proposed time limits within which such persons should not be permitted to reenter the noxious area.

"Such restraining action may require physical force to implement it in practice," he declared.



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***Lens is held firmly** in place by strong metal lock bar. Annealed end piece on the lock bar can be lifted with a fingertip for quick, easy lens replacement.

MODEL #440 provides all-around protection against heavy-impact, chemical splash, dust, sparks or molten metal. Soft vinyl frame form-fits any shape face. #440 is large size which fits over any prescription glasses.

MODEL #440M provides a snug fit for medium and small size faces. It supplements the large #440 to end all cover goggle problems.

For details, see your authorized EYE SAVERS supplier or write direct.

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232 West Exchange Street
Providence 3, R. I.

Quality Eye Protective Equipment — *Made by the Leaders in Plastics*

In Canada: Levitt-Safety Limited, Toronto 10, Montreal 26, Winnipeg.
(For details, use Key # F-20 on card on page 1)

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THE FIRST FULLY ADJUSTABLE BO'S'N'S SWING
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5,000 LB. TENSILE STRENGTH NYLON WEBBING IN RISER AND WAIST STRAPS...3 INCH, 4-PLY COTTON WEBBING BODY PAD...OPTIONAL WOOD SEAT STRAPS ONTO BELT, CANNOT FALL OFF.
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* FALLS ARE THE LARGEST SOURCE OF WORK INJURIES...AND FALLS TO A DIFFERENT LEVEL HAVE THE HIGHEST AVERAGE COST PER CASE OF ALL COMPENSABLE WORK INJURIES. * FROM 1957 ACCIDENT FACTS
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(For details, use Key # F-21 on card on page 1)

inside the trade

Quentin Keeny has joined *DUST SUPPRESSION AND ENGINEERING CO.* of Lake Orion, Michigan, as Sales Manager. Mr. Keeny was formerly with the Process Development Staff of General Motors Corporation.

ANSUL CHEMICAL COMPANY has announced three promotions in its sales organization. *Jay H. Jarret*, former refrigeration sales manager in Ansul's mid-continent region, has been named assistant to Sales Vice-President, L. C. McKesson. *Richard W. Drebus* is now director of Marketing and Administrative Services in the company's sales division. *Edward A. Beacham* has been selected manager of Refrigeration Sales Development.

Jarret, who joined Ansul in 1953, will be in charge of three sales staff departments: Sales Analysis and Control, Sales Coordinating Services and Refrigeration Sales Development. As Director of Marketing and Administrative Services, Drebus will be responsible for Ansul's Special Hazards Department, Marine Department, Fire Equipment Sales Development and National Accounts Group. Drebus, who joined Ansul in 1952, was formerly manager of Sales Administrative Services. Beacham joined Ansul in 1956 as assistant manager of New Products in Refrigeration Sales Development.

THE MANN EDGE TOOL COMPANY of Lewiston Pa., has purchased the *O. A. Norlund Company, Inc.* of Williamsport, Pa., according to announcement made by Harold E. Manbeck, Vice President of the acquiring organization. Under the purchase agreement the Mann people acquire the stock, inventory and equipment of this long recognized manufacturer of gaffs and foot safety devices. Operations will be moved to the Lewiston plant in the near future where the business will be continued under the name of *O. A. Norlund Division, Mann Edge Tool Company.*

Paul F. Lofgren has been promoted Assistant Sales Manager of the *Ball Valve and Steel Pipe Union Division of the ROCKWOOD SPRINKLER COMPANY*, it was announced by William J. Carroll, President and General Manager. Mr. Lofgren attended Becker Junior College and came to Rockwood in 1945. He was formerly the company's Sales Engineer in the New England and New York State territories.

THE GLENDALE OPTICAL COMPANY has announced the establishment of a new warehouse distributor on the West Coast to handle its industrial optical safety equipment line in the seven-state area. The newly-formed *Fibre-Metal Pacific Co., Inc.*, will take over distributorship of Glendale products from the K. W. Distributing Company and will occupy the same warehouse and office space at 7332 South Garfield Avenue, Bell Gardens, California. *H. V. "Vern" Gates* has been appointed to head the new distributorship as General Manager. Fibre-Metal Pacific will represent Glendale in Nevada, Arizona, Oregon, Washington, Idaho and Utah as well as California.

Thomas A. Patterson, Jr. has been named Advertising Manager of *INDUSTRIAL PRODUCTS COMPANY*, distributors and manufacturers of industrial safety equipment and first-aid supplies. At the same time, Roger Shipman, Vice President of the forty-year old firm, announced the appointment of *The Ullman Organization* of Philadelphia as their new agency for advertising, promotion and publicity.

Prior to joining Industrial Products Co., Mr. Patterson for many years was responsible for planning and creating technical literature, catalogs, advertising and merchandising plans for The Aitkin-Kynett Company and Ketchum, MacLeod & Grove of Pittsburgh.

George Heard, former manager of Dravo Corporation's contract department in heating and air-conditioning, has been elected president of *SAFETY FIRST SUPPLY COMPANY*, Pittsburgh, manufacturers and distributors of safety equipment for industry. He succeeds *George S. Shull*, who has been named chairman of the board after serving as president since 1923.

Also elected to new positions in the 43-year-old company's first major reorganizations are: *Davis E. Houston*, vice-president and general manager; and *Philip A. Lascher*, vice-president-sales.

MINE SAFETY APPLIANCES CO. announced the appointment of *John P. Lytle* as manager of engineering, Safety Products Division. He was formerly a project engineer of the company.

B. G. Tarkington has been assigned as a safety products sales engineer in Memphis, Tenn. He had been serving in a a similar capacity in the North Little Rock, Ark., area.

Richard A. Yost has been appointed a safety products sales engineer in Akron, Ohio. He joined MSA's Safety Products Marketing Services in 1957. He succeeds *Paul L. Weinheimer*, now assigned to the San Francisco, Calif., area.

John W. Joy has been assigned as a safety products sales engineer in Indianapolis, Ind. He replaces Charles Cullen who is on leave of absence.

Safety Appointments

William M. Thorpe has been promoted to Safety Engineer for Jones & Laughlin Steel Corporation, it has been announced by George E. Flaccus, Jr., Vice President —Industrial Relations. Mr. Thorpe, who succeeds the late George C. Peters, was a Safety Inspector in the Aliquippa Works. He joined J&L in 1956 in this capacity. He holds a Bachelor of Science Degree in Mathematics from Geneva College in 1949. He also is a graduate of the University of Pittsburgh in 1953 with a Master of Education Degree.

THE POSITIVE LADDER SAFETY DEVICE LOCKS-IN-A-NOTCH!

Prevents death and injuries from falling. If climber starts to fall, device locks in a deep notch on carrier rail and limits fall to approximately 6 inches —distance between notches.

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Will catch and hold workman if he starts to fall, even if unconscious. Cannot slip on down ladder. Requires no attention from climber; he climbs in normal manner. Inexpensive. Easy to install; 3 men can clamp it to ordinary ladder in few hours. Clamps to any rung ladder, peg ladder, pole or framework. No welding or cutting. Notched rail hot-dipped galvanized. Entire equipment rust and corrosion proof. Can be kept free of ice by applying heat inside the carrier rail. In use approx. 11 years. Approved by Safety Engineers and Government Agencies throughout country. Patented. Manufactured only by

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1024 Burbank Blvd., P.O. Box 1052
BURBANK, CALIFORNIA

(Use Key # F-22 on Inquiry Card on page 1)

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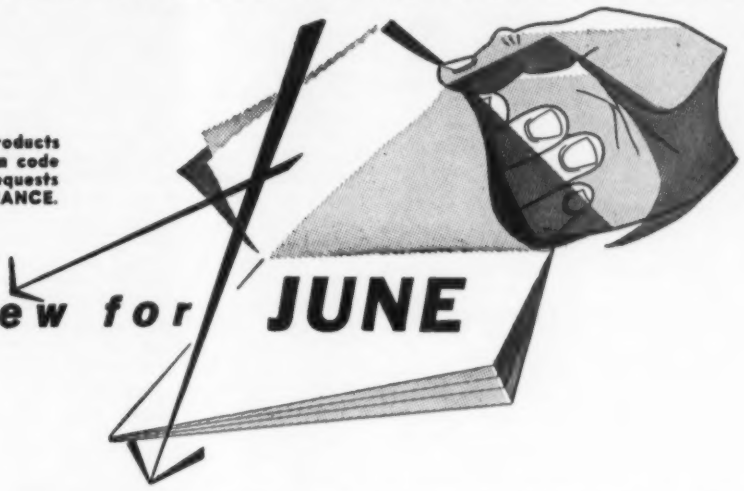

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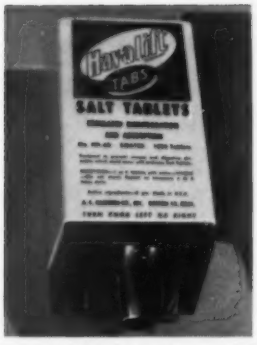


PRE-PACKAGED SALT TABLETS IN DISPOSABLE DISPENSERS

(Use Key # 861 on Inquiry Card on page 1)

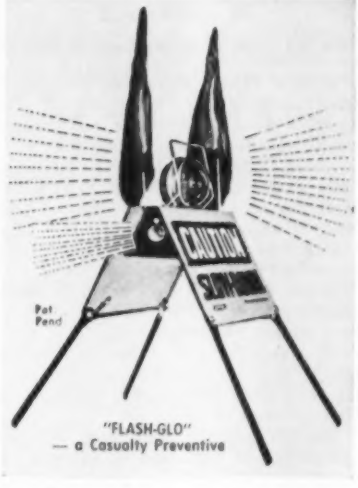
FOUR completely new all-plastic dispensers for Hav-aLift Coated and Regulated Salt Tablets are announced by The A. E. Halperin Co. The same popular tablets that have been used for years to combat heat exhaustion are still being inserted in these convenient, disposable dispensers, but the capacities have been changed to 500 and 1000 tablets. The new disposable units are made of medium-impacted styrene and they can be easily mounted at accessible and convenient locations throughout industrial plants or on construction projects. Each dispenser comes complete with two mounting screws. The coated tablets disintegrate at a regulated rate to eliminate the possibility of nausea or digestive disorder. The pre-filled dispensers are available with either Salt or Salt-and-Dextrose Tablets, and are packed 12 dispensers to a case.

FIRE-RESISTANT HYDRAULIC FLUID

(Use Key # 862 on Inquiry Card on page 1)

MONSANTO CHEMICAL Co. has announced the development of a new type of synthetic fluid for industrial hydraulic use which lubricates like a premium oil, is fire-resistant and all but impossible to wear out. Trademarked "Pydraul A-200," the new fluid is a halogenated hydrocarbon formulation which is described as "a distant relative of petroleum, but so many chemical steps removed that its lubricating ability is the only remaining family trait."

The fluid will not ignite spontaneously at temperatures which are hot enough to melt aluminum. Its extreme stability prevents it from decomposing so that, with occasional filtering for atmospheric dirt, the fluid should last indefinitely, the company states. "Pydraul A-200" is uniquely compatiable with other all-synthetic hydraulic fluids. It can be used as make-up in present synthetic fluid-equipped systems with little or no conversion of equipment.



"FLASH-GLO" — a Casualty Preventive

VERSATILE WARNING DEVICE

(Use Key # 863 on Inquiry Card on page 1)

AN UNUSUALLY versatile emergency warning device is announced by Tedcar Products Co. Called the "Flash-Glo," the metal warning sign with wording on both sides has collapsible legs and is equipped with two-way top flashing lights, a 6-volt battery, reflectorized lettering, detachable flags, and, as optional equipment, two additional steady lights beamed from the other two sides. The unit therefore gives warning in all four directions. It can be used for emergency lighting or for machinery breakdowns in industrial plants, as emergency warnings by utility, police or highway crews, by disabled trucks or cars, as a warning to pedestrians to watch out for temporary hose lines or pipes.

LIGHTWEIGHT SAFETY CAP

(Use Key # 864 on Inquiry Card on page 1)

A NEW lightweight safety cap, designed for superior head protection in a wide range of light and medium industrial applications, has been introduced by GenTex Corporation. Weighing less than 8 ounces complete, the new GenTex Lightweight Safety Cap is made of contoured polyethylene, with a shock-absorbing acetate headband adjustable to fit all sizes and a plastic foam cushion on the inside of the crown. It is available in a full range of colors. Impact resistance in excess of 20 foot-pounds was revealed in safety tests.

A wide range of applications includes all technicians and workmen who are subject to head injury in tight working quarters, such as meter readers, light construction and maintenance workers, mechanics and many others. The hat is not intended for situations in which protection against heavy falling objects in needed. The new cap is available with sound-attenuating equipment, and in this design, has been received enthusiastically by airlines, for the use of their maintenance personnel. Winters liners are also available.

TESTS FOR ACCIDENT-PRONE

(Use Key # 865 on Inquiry Card on page 1)

A TEST designed to reduce the 8 billion dollars American industry pays annually for accident-caused personal injury and property damage has been announced by Executive Assets, Inc., consultants to business and industry. Sixty-eight American and Canadian companies in 36 industries have cooperated in developing the 150-part, multiple-choice questionnaire which grades workers according to inherent fitness for jobs of varying degrees of hazard. The test takes 20 minutes to complete and fits readily into job screening procedures already in use by company personnel, safety and medical departments.

The purpose of the test is to detect in advance the worker most likely to cause repeated injury to himself and others. The injury repeater tends to be less prudent, more easily distracted, disinclined to accept rules, less affected by the feelings or actions of others, differently affected by the idea or memory of pain, presumptuously self-assured and aggressive and self-assertive towards others. The test is based upon 17 years of intensive specialized research originated by Dr. Thomas N. Jenkins, Professor of Psychology Emeritus, New York University. Studied were 465 pairs of proven "safe" and "non-safe" workers selected by company safety and medical departments. Each member of a pair was "matched" as to kind of work performed. The range of work activity was purposely broad, including chemicals, steel, textiles, paper making, transportation, light and heavy machinery production, aircraft, public utilities, meat processing, dairy production, bakeries, foundries, post offices and nuclear operations.

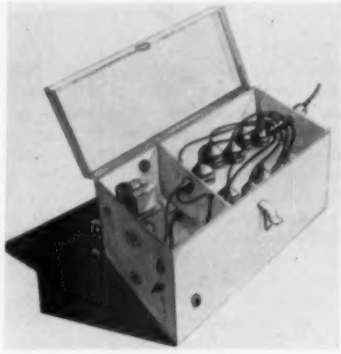
NEW LINE MARKER

(Use Key # 866 on Inquiry Card on page 1)

A NEW, low-cost line marker designed to produce clean, sharp lines quickly and economically has been introduced by Cost Reduction Equipment Co. Recommended for precision, controlled line marking for warehouses, parking lots and stalls, garages, school grounds and all industrial and safety guide lines, the CRECO line marker produces up to 500 feet of lines before refilling. Straight, curved, or skip lines are made with equal ease at walking speed.

Paint flow is gravity fed on the surface to be marked, eliminating fire and explosion hazards and mist damage to stock, machinery and automobiles. Flow is accurately controlled at the handle grip and can be instantly regulated for the type of surface and speed of application. Exact line control is maintained by a built-in line guide and the four large diameter rubber-tired wheels minimize wavering. The unit weighs only 10 pounds and is well balanced to permit easy lifting and moving from line to line without danger of upturning.

Quickly interchangeable high-quality fiber brushes produce 2, 3 and 4 inch wide lines. Straight-through valve from tank permits rapid, waste-free recovery of paint after completion of job. Two-and-one-half quart capacity cast aluminum body is easily filled and cleaned through a large opening.



AIR SAMPLES TAKEN IN SEQUENCE

(Use Key # 867 on Inquiry Card on page 1)

A NEW Process Sequential Sampler is designed to simplify the taking of dust samples from smoke stacks and process vents. Twelve dust samples are automatically collected in sequence on 2-inch filter disks. The program of sample collection is easily set by the operator. Air may be sampled at a rate of 2 to 4 CFM depending on the accessory vacuum pump used. Made by Gelman Instrument Co., the new sampler is used in air pollution, health physics, industrial hygiene-safety, and process efficiency studies. It is available optionally with a heated chamber surrounding the filter-holders. This prevents moisture condensation when sampling saturated streams.

The filter may be glass fiber, cellulose, porous plastic membrane or asbestos depending on the sampling problem. When particle size and count are of interest dust samples are collected on porous cellulose-ester filters, which are then made transparent with immersion oil. This filter is also recommended when particles having weak alpha and beta emission are being determined. When weight of dust alone is a factor glass fiber papers may be used for collection. Ordinary laboratory filter papers may also be used for dust collection.

The Process Sequential Sampler is supplied in a heavy duty carrying case. Construction is of stainless steel and anodized aluminum.

"THROW AWAY" SWEATBANDS

(Use Key # 868 on Inquiry Card on page 1)

ELASTIC band holds feather-light, four-ply, powerfully absorbent Gauztex Sweatbands in just the right place. Priced to be thrown away when you wish. No fussy pre-wetting. No metal parts. No potential irritations. Designed for use with helmets or goggles. Made by General Bandages, Inc., Gauztex Sweatbands keep the worker cooler, safer, more efficient. Sweat can't sting the eyes, blur vision or carry foreign matter into the eyes.

HOOK SAFETY LATCH

(Use Key # 869 on Inquiry Card on page 1)

AN INEXPENSIVE safety latch for hoist hooks which prevents accidental detaching and dropping of loads has been introduced by The Harrington Company. The new type latch can be fitted on any hoist hook quickly, with simple hand tools, to provide safety without expensive custom conversion or hook replacement.

The new safety device has only two major parts—a clamp-on collar and a corrosion resistant spring-loaded safety latch. The collar—held permanently in place by a bolt and self-locking nut—is made of a manganese-bronze alloy that is sufficiently ductile to conform to the contour of any hook shank, regardless of its shape. Lugs on both sides of the safety latch allow personnel to set or release the device without placing fingers in the hook opening. This prevents possible injury.

The latch is held firmly in place by a stainless steel spring which provides constant pressure between latch and hook. In addition, the latch is notched on its free end to prevent shifting from the locked position. The safety latch available in four sizes—for one-quarter to three ton units—will fit any manufacturer's hooks.

PLASTIC INSTEP PROTECTOR

(Use Key # 870 on Inquiry Card on page 1)

A NEW plastic metatarsal foot protector designed to combine added safety with greater wearer comfort and flexibility has been introduced by Safety First Supply Company. This all-purpose instep protector, called the "Diamond," consists of a tough outer shell of flame-resistant plastic (.062 inches thick) over a high tensile aluminum plate which is sandwiched between two ½ inch layers of unicellular vinyl plastic.

Designed for use with safety toe shoes, the protector weighs only 5½ ounces, can be worn on either foot, and fits all shoe sizes. It is held in place by a strong steel spring which slips easily over the heel. This spring binding, keeps the protector firmly and comfortably in place without hampering freedom of movement. Falling objects are deflected away from the foot by the special design of the protector shell.

NEW SAFETY HAT LINE

(Use Key # 871 on Inquiry Card on page 1)

AN ENTIRELY new line of fibre-glass, aluminum and electrical (plastic) safety hats and caps has been developed by Apex Safety Products, Cleveland, Ohio, and is marketed nationally and internationally by Boyer-Campbell. Both firms are divisions of White Sewing Machine Corporation.

The new safety headgear has been developed for all industrial, mill and mining applications, and features a new polyethylene suspension which includes lockstraps at the peak of the suspension to assure minimum 1¼" clearance between

crown and hat shell, and yet maintain adjustment provisions for comfortable crown depth fit.

A second exclusive feature is a plastic-zippered leather or leatherette sweatband which may be replaced in an instant, without disturbing the suspension. Although the suspension can be removed swiftly, it may be left intact for cleaning and sterilization. One hat or cap will accommodate all head sizes from 6⅝ to 8.

The hats and caps combine light weight, cool, well ventilated and comfortable wear with maximum resistance to impact, penetration and shock. They are fully resistant to water or moisture absorption or corrosion, and all exceed federal or other standards for hard hat safety. A special feature of the fibre-glass hats and caps is the use of a flame-retardent resin, providing increased fire resistance. Both the fibre-glass and plastic hats are free from metal parts. The aluminum line has no metal except for the shell. The fibre-glass line is available in many colors and also features a phosphorescent hat for applications such as in mines where "glow in the dark" is desirable.

The electrical hat or cap is molded of highly resilient linear polyethylene. The minutest damage to the hat shell is instantly visible, assuring continuing electrical protection. Standard color is yellow.

ULTRASONIC THICKNESS TESTER

(Use Key # 872 on Inquiry Card on page 1)

WEIGHING less than five pounds including batteries, probe, harness, cable and earphones the new Audigage Model 6, made by Branson Instruments, Inc., is said to be the smallest ultrasonic gage ever built. Completely self-contained, it is used for nondestructive thickness measurement of most metals, glass, ceramics,

and plastics from one side. Because of its light weight, simplicity of operation and hand-portability, and because no external source of power is necessary, this new ultrasonic resonance gage is ideal for field inspections of ship hulls, piping, tanks, pressure vessels, bulkheads, and similar equipment areas where corrosion is suspected.

A principal advantage of the instrument is that it is direct-reading. By setting a selector switch to one of three positions, the thickness of steel, aluminum, or copper is determined automatically, without conversion charts or separate calculations. A fourth position is provided to permit calibration for other materials. Thus, the instrument is very simple to operate, and inexperienced personnel may use it effectively after a short training period. It is powered by three standard radio-type mercury batteries designed for 70 hours of continuous operation. A battery check is provided on the panel meter, and an electronic voltage regulator is incorporated in the instrument for accuracy. Instrument range is 0.09 to 5.0 in. Accuracy: within 3 to 5 percent. (A different type of ultrasonic resonance instrument, the Vidigage, is recommended where accuracies as high as 0.1 to 1.0 percent are required.)

The Audigage Model 6 may be used on any flat, cylindrical, or compound-curved surface, down to 1-in. radius, using the standard transducer provided. Different transducer mountings are available for measuring smaller and concave surfaces.

HEAT RESISTANT GARMENTS

(Use Key # 873 on Inquiry Card on page 1)

FROMMELT Industries announce the addition to their Protective Garment line of a new Protective Heat Cloth called "Ray-Foil." Frommelt Patented "Protekote" garments are available in this heat resistant material and offer the wearer increased protection from high radiant heat. The material is a new aluminized fabric of fire resistant duck, rayon and asbestos. Heat reflecting garments can be specified with Ray-Foil back or front vest, sleeves, or hood . . . for use in cement and steel mills, glass, tile and chemical plants, refineries, brick plants, power generating stations, etc. These garments are light in weight (8 lbs), carefully tailored to fit, and furnished with "pop-open" buttons. underarm ventilation is provided. All seams are finished inside. Medium and large sizes are available in 36" to 44" lengths.

PLASTIC PROTECTOR FOR TAGS

(Use Key # 874 on Inquiry Card on page 1)

ORDINARY paper tags may now be used where more costly metal tags have previously been required. The clear plastic protector protects the paper tag from weather elements when used outside on transformers, terminals, disconnect switches, etc. Also, it is being used indoors where tags are required on switches, machinery, important parts, etc. and are easily soiled. The paper tag remains legible indefinitely when used in the plastic tag protector.

Initial cost is low and the plastic tag protector may be used over and over. It is available in three sizes, from Bedford Products Inc.

NEW VACUUM CLEANER

(Use Key # 875 on Inquiry Card on page 1)

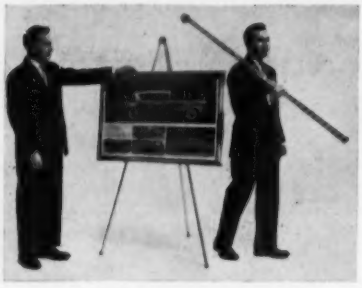
A HEAVY-DUTY vacuum cleaner that combines high vacuum power with quiet operation for use in hotels, service stations, office buildings, auditoriums, and hospitals, has been introduced by the Black & Decker Mfg. Company. According to the manufacturer, the "No. 35" heavy-duty vacuum cleaner "works with a whisper." Actual sound meter tests have been made which indicate that the unit is up to 200% quieter than any comparable vacuum cleaner on today's market, the manufacturer claims. The unique design of this new unit includes a rubber-mounted motor (1 H.P. maximum), sound-absorbing felt baffles, and a diffused air-exhaust through the motor drome to assure quieter operation. The unit is compact and easy to move through narrow aisles or up and down stairways. It can be fitted with the complete line of attachments. Standard equipment includes a 10' wire-reinforced plastic hose, a 25' 3- conductor cable and plug, 6" nozzle, 6" brush, 20" extension tube, 3 wheels, and a convenient push-cart handle.

NEW DACRON FIRE HOSE

(Use Key # 876 on Inquiry Card on page 1)

A NEW industrial fire hose that can be soaked continously in mud holes, strung out in the dankest part of an underground mine for months at a time, or hung in an atmosphere heavy with acid fumes without hurting the hose is announced by B. F. Goodrich Industrial Products Co. The hose is so tough that a truck can run over it without causing a burst, claims the manufacturer. New "Imperial" hose, made with an all-Dacron jacket, was designed for heavy duty service in oil refineries and chemical plants, as well as fire service in the contracting and mining industry, in general industrial plants, etc.

The single jacket hose is designed to withstand surge pressures far beyond its initial 500-pounds per square inch pressure test. It features resistance to abrasion as well as being impervious to mildew, oil, acids, alcohol, hydrocarbons and detergents. The Dacron jacket makes "Imperial" hose lighter, more flexible, stronger and longer-wearing than conventional industrial fire hose, the company states. Uniform tension on each strand during the weaving process keeps pressures equally distributed when hose is in use. Ends of the new hose are reinforced with the company's patented "Plylock" end protection, a layer of hard twisted cords extending 12 inches back from the coupling. Strong, oilproof rubber made for hose tube permits use of a thinner tube. This means that "Imperial's" inside diameter is enlarged without increasing its outside dimension. The new hose is available in the following sizes: 1 inch, 1½ inches, 2 inch, 2½ inches.



FOLDING TRIPOD EASEL

(Use Key # 877 on Inquiry Card on page 1)

NEW low-cost folding aluminum tripod easel holds display frame, display cards, charts or a blackboard for safety meeting demonstrations or for temporary warning signs in emergency or maintenance areas. Manufactured by Arlington Aluminum Company, its folding feature gives easel additional portability. Legs fold against spring tension in the head and then may be tied for closet storage; or easily carried over the shoulder. When untied, legs snap into position, ready for use.

Decorative polished aluminum head conceals spring and tube ends. Top of head is threaded for attaching flanged sign or emblem. The easel is designated Model 121. Legs are polished aluminum tubing. Studs are located in two positions for either horizontal or vertical display. The easel is 69" high and ships as one-piece assembly. Weight 4½ pounds.

NEW POWER SWEEPERS

(Use Key # 878 on Inquiry Card on page 1)

THE FIRST two models of a new line of power sweepers designed to reduce sweeping costs have been introduced by Clarke Floor Machine Co. The two models, CS-27 and CS-36, are 27" and 36" wide respectively and according to Clarke, sweep cleaner, faster and more dust-free, pick up all types of debris, operate easily in congested areas or large, open spaces, both inside or outdoors.

Both units have a unique forward-stop-reverse handle bar that provides fingertip control and eliminates shifting of gears. The easily removable dust bag evacuates dust from the entire width of the sweeper, yet is compactly integrated in the sweeper design. Other features are: the new broom control which adjusts the rotary broom to 23 different heights for maximum broom life; the optional side broom which sweeps right up to walls; the large, easily detached, easily emptied debris hopper; the neoprene aprons which enclose the broom chamber and keep dust confined; and the heavy duty, trouble-free belt drive. Both models have speeds of up to 3 mph and the Model CS-36 is available with a riding sulky.

HEAVY DUTY NEOPRENE GLOVE

(Use Key # 879 on Inquiry Card on page 1)

A NEW process, by which a thicker coating of reinforced neoprene is applied on the palm side than on the back, now gives this "Redmont" glove 20% longer wear than before. Made by Edmont Mfg. Co., it provides greater protection against industrial solvents, acids, caustics and alcohols and the hazards of cutting, snagging and abrasion. Improvement in the coating compound also makes the glove much more flexible. Wing thumb pattern and curved fingers insure comfortable fit.

Available in six fully coated, liquid-proof styles, consisting of knitwrist, 10", 12", 14" and 18" gauntlets and a 12" gauntlet specially insulated against temperature extremes.

LUMINOUS WARNING FLAG

(Use Key # 880 on Inquiry Card on page 1)

MADE OF long lasting vinyl-bonded-to-nylon material with super strength dacron stitching, this new type luminous warning flag is uniformly bright on both sides, giving extra visibility—day or night. Thermally reinforced edges provide exceptionally high tear strength. According to Industrial Products Company, developers and exclusive source for this item, their "Ray-D-8" Flag will outlast comparable materials by at least 4 to 1. Tests have also shown that it will not fade or discolor and is highly resistant to abrasion and temperature extremes. Furnished standard in a special luminous red in sizes 13" x 13", 16" x 16" and 18" x 18"—complete with wooden staff. Also available in high visibility yellow and yellow-red combinations, and in grommeted and special styles.

AUTO SEAT BELTS

(Use Key # 881 on Inquiry Card on page 1)

HIGH STYLE for automobile seat belts in 12 colors has been introduced by Rayco Mfg. Co. Many motorists, despite the urging of safety experts, have resisted installing seat belts because they felt that webbed belts are unsightly when compared with the sleek interiors of new cars.

The belts, of woven pre-stretched nylon, are styled in fade-proof black, white, grey, tan, turquoise, royal blue, powder blue, flame red, maroon, and yellow. They are designed to absorb an impact up to 5,000 pounds with no give, and exceed aircraft requirements, according to a company representative. The belts are equipped with an emergency "flip release" escape buckle. New installation techniques make it possible to install a seat belt in less than 30 minutes, making it as easy as installing a set of seat covers.

RENTAL OF SPRAY EQUIPMENT FOR ROOF COATING

(Use Key # 882 on Inquiry Card on page 1)

MONROE'S "Siliconed Rufferseal" can be applied to roofs at greatly reduced labor cost with Monroe-Spray Equipment. No skilled labor is needed—ordinary workmen or a maintenance crew can do the job in ⅓ to ¼ the time required by brush methods. The spray equipment eliminates buckets and hoisting of material. The rental charge is nominal with the purchase of 10 or more drums of Monroe Company's coating.

NEW FLOOR COATING

(Use Key # 883 on Inquiry Card on page 1)

"WHISTL-PHANE," a new non-wax, extra-safe floor coating has been made available by the Whistlclean Corporation, a subsidiary of L. Sonneborn Sons, Inc. Described as exceptionally slip-resistant, it is recommended for the maintenance of composition floor surfaces (asphalt, vinyl, rubber, linoleum, vinyl asbestos, etc.) and is formulated from plastics used in the manufacture of thermo-plastic sheets, tubes, bags and similar flexible products. It dries quickly to a self-polishing, tough finish, that will outwear conventional water emulsion wax films, says the manufacturer. The coating can also be easily and quickly removed.

IMPROVED SAFETY VENT

(Use Key # 884 on Inquiry Card on page 1)

A RECENT improvement in the design structure of the automatic components in the Vent-A-Drum Safety Valve has just been announced by the Central Safety Equipment Co. The improvements increase the speed of the valve's jetting action in the event of fire or sudden temperature changes take place. The Vent-A-Drum is used in bung openings of standard drums to eliminate the danger of explosion when storing flammable fluids. It permits the liquids to be withdrawn by allowing air to enter or escape and automatically controls pressure changes. If fire should occur, the valve relieves excess pressure instantaneously by jetting vapors outward through 6 vents. The valve also reduces the loss of liquids in normal storage by reducing evaporation. The Vent-A-Drum valve has been approved by Factory Mutual Testing Laboratories.

BOTTLE HOLDER-CARRIER

(Use Key # 885 on Inquiry Card on page 1)

NEWLY developed bottle holder-carrier protects glass bottles containing acids and other hazardous liquids when carrying or storing in plant or laboratory. Safeguards employees from spilled liquids and injury from broken glass. Bottle is completely surrounded by polyester urethane padding to absorb all shocks received from accidental bumping or knocking against shelves, tables and aisle obstructions, or by dropping.

Sizes are available for use with bottles from 5⅛ inch to 5⅞ inch diameters and from 6" 6½" diameters. Terne plate body is electrically seam welded and has a sturdy bail handle for convenience in lifting and carrying. Light weight; occupies minimum storage and shelf space. Manufactured by The Protectoseal Company.

WATER-SOLUBLE ACIDIC SOLVENT

(Use Key # 886 on Inquiry Card on page 1)

FINE ORGANIC'S water-soluble acidic solvent, F.O. 190, keeps weight loss to a minimum, which is particularly important in close tolerance. According to the manufacturer, F.O. 190 removes oil, rust and corrosion in one operation, providing a corrosion-resistant surface for uniform, permanent paint adhesion. It also removes the usual rust preventives, identification inks, stamping oils, carbon smuts and other soils. It does not need additive compounds, special equipment or heating. Possible rejects are cut down because should accidental gouging take place, corrosion "creep back" cannot occur.

F.O. 190 is recommended for small parts or units as big as airplanes, for equipment maintenance without disassembling, during fabricating or reconditioning operations. It is non-flammable—no flash point to the boiling point. It has no unpleasant odor. It can be used by: brush, swab, spray, or dip; it can be used hot or cold.

TRAFFIC FLASHER & HORN

(Use Key # 887 on Inquiry Card on page 1)

HIGHWAY crews are given double protection against the hazard of oncoming traffic by the Falcon "Traffic Flasher Alarm," introduced by the Falcon Alarm Co., Inc. To a flashing red warning light the new highway safety device adds a loud warning horn. This horn is triggered when the vehicle overrides the light and runs over an air hose placed ahead of a closed lane. The loud blast of the horn not only warns the motorist to slow down and move over, but gives warning up ahead to construction and maintenance

crews, utility men, police at the scene of an accident, etc., allowing them time to get out of the way.

The horn and warning light are combined in a compact, portable waterproof unit. The horn is mounted on a rugged steel box container that houses the light and its battery, and the horn operating mechanism which includes a replaceable can of Freon by which the horn is powered. A separate compartment with hinged cover contains the air hose and extension wire. Exterior toggle switches allow independent operation of horn and light as desired. A carrying handle makes the unit easy to lift and carry.

zone mail indeed results in speed

The Post Office has divided 106 cities into postal delivery zones to speed mail delivery. Be sure to include zone number when writing to these cities; be sure to include *your* zone number in *your* return address — after the city, before the state.

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SEND THIS PERSONAL SAFETY MESSAGE TO EVERY ONE OF YOUR EMPLOYEES.

- Safety is made appealling . . . vivid . . . engaging . . . colorful!
- Each worker clearly sees how safety benefits him . . . how doing his part helps others!
- You get enthusiastic safety cooperation instead of tolerance . . . from every employee . . . every month!

. . . talks the worker's language!

YOUR IMPRINT HERE!

packed with pictures, alive with animated cartoons, touched with humour that gives snap to your message, it makes safety interesting and down to earth. Twelve times a year it covers accident hazards. Across the nation leading industrial firms state it's the only safety paper their employees will read . . . and take home to their families.

It gives the employer the advantages of personal contact . . . saves time and expense. One "lost time" accident prevented . . . more than pays for the yearly cost! Try it . . . it works!

YOUR SIGNATURE HERE!

Make Your Safety News your own publication . . . your good will ambassador . . . working for you toward better industrial relations. If you wish, your facsimile signature can be printed here to identify you with the message that gets next to your men and boosts morale.

NOTE: *Your Safety News* is designed to promote better employer-employee relations. Every item is carefully weighed and tailored to this viewpoint!

INSIDE PAGES
(Pages 2 and 3)

THoughtlessness is a THief
We'll steal his way into what you're doing, distract your attention and walk off with a finger, arm, eye or foot. Thoughtlessness takes many forms: it may be daydreaming, or worry about some personal problem, or just plain inattention. Anything that distracts you, especially around machinery, is a thief of your personal safety.
Playfulness is a Pirate
He is a deceptive rascal. His hi-jinks may put him in the spotlight, but his practical jokes and showing-off often result in serious bodily injury and even death. And note this: he, himself, has lost a leg! As so often happens, horseplay can boomerang and the practical joker gets hurt too!
What You Should Know About Carbon Monoxide
This is a picture of carbon monoxide gas!
That's right, you can't see it. It's colorless, non-irritating, tasteless, practically odorless, but also deadly.
Here are the symptoms of carbon monoxide poisoning: First, a tight feeling across the forehead, followed by headache, throbbing temples, weariness, weakness, dizziness, nausea, loss of muscular control, increased pulse and breathing. BUT if the concentration of the person gas is high, there may be loss of consciousness without these warning signals.
Just a few breaths of air containing 1% carbon monoxide can be fatal . . . so can one part of carbon monoxide in a thousand parts of air when breathed for 90 minutes.
It is possible for carbon monoxide to leak inside of a car if there is a loose exhaust pipe or manifold connection, blown-out exhaust gasket, cracked exhaust manifold, or leaky muffler. Play it safe.
1. Be sure your muffler and exhaust are in good condition since they can leak long before they become noisy!
2. Always keep a car window open, even a little, for fresh air.
AN INTIMATE LOOK AT FOUR VILLAINS
Safety Laziness is a Simon Legree
If you are lazy about safety rules, then accidents will have the whip hand. We are safety-lazy when we don't bother to use mechanical guards, to take time to get the right tools for the job, to wear protective equipment such as goggles, hard hats, safety shoes, respirators, gloves, etc. Yes, Simon Legree has a whole pack of accident hounds to loose you.
Hazardous Methods are a Hold-up Man
This villain, unsafe work habits, likes to lie in ambush for the unwary. But how do we fall into bad working habits? It may be by trying to cut corners, by wanting to keep to the old way of doing things, or by over-confidence. It's hard for anyone to believe that an accident can happen to him. It's easier to make excuses to ourselves for ignoring safety rules, but alibis only lead us up a blind alley with an accident waiting in ambush.
Two Excellent Success
For Wearing Safety Shoes

EMPHASIZES SELF INTEREST

Your employee's self interest in his own safety is always emphasized. Constant safety consciousness is promoted by covering household hazards, transit to and from the job and on the job caution against accidents.

CLEVERLY ILLUSTRATES THE POINT

Artwork is carefully chosen to lodge home each point persuasively. The cartoon style makes YOUR SAFETY NEWS as familiar and welcome as the picture packed Sunday supplement.

WINS READERS WITH A FOLKSY APPROACH

Keeping the contents folksy, adding the light note of humor, gets your message across with a nudge instead of a bludgeon. Your monthly chat gets enthusiasm instead of indifference.

RIVETS ATTENTION WITH VIVID COLOR

Generous use of color sparks the message, and adds impact to the contents of YOUR SAFETY NEWS. Each issue is as alive as any news-stand favorite.

HOW TO ORDER:

YOUR SAFETY NEWS may be ordered with either the standard imprint or with your Own Special Imprint. The standard imprint reads "PLEASE COOPERATE FOR THE SAFETY AND HEALTH OF ALL . . . signed . . . A SAFE WORKER."

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NOTE: Although a personal signature is effective, some firms substitute: SAFETY DEPARTMENT, YOUR SAFETY COMMITTEE, A SAFE WORKER, etc.

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New Product Developments

Keep CESCO First on Our Approved List!

MY JOB is to make certain that the safety equipment our company buys is the finest available. Before I buy any safety product, I carefully examine its design features, the quality of materials used, and the practical on-the-job advantages it offers. CESCO head and eye protective equipment constantly earns top position on our approved list because of the overall excellence that their products provide on these counts. Take this new CESCO Helmet Type Face Shield, for example. Made of translucent fiber glass, it has a replaceable plastic window mounted on a molded rubber gasket for greater resistance to impact. In addition, it offers a new detachable headgear which is adjustable three ways to fit any head size. It's features like these that make an investment in CESCO safety equipment last longer, give greater user comfort, and most important—provide positive protection against the hazard for which it is designed.

I urge you to see the many new safety equipment developments that your CESCO distributor is offering right now! He's also a safety specialist who will give you expert advice on any safety equipment problem. What's more, he will back up his recommendations with prompt delivery of the items you order —in most cases, from the complete line of CESCO products he carries in stock.

Coast to Coast, there's a CESCO Distributor nearby ready to serve you!

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CHICAGO EYE SHIELD COMPANY
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(For details, use Key # F-23 on card on page 1)

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(For details, use Key # F-24 on card on page 1)